JUL 17 1947
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Southern FLIGHT

AERO

July 1947
35 cents

Including MODERN AIRPORTS

Southwestern aviation 28-29

THE CESSNA 140

See advertisement on page 7

TL501
.S665

In Texas... "Survival of the Fittest"

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TIME-TESTED

"Out here in the Great Plains country of West Texas, we've always had a 'survival of the fittest' tradition," states Manager H. S. Higginbotham, of Abilene Aviation Company. "And we know that because of our vast extremes of temperature and many windy, sandy days, only the 'fittest' of aircraft finishes can survive.

"Our experience has always been that Glidair dopes are rugged and weather-resistant, as well as rich in both color and texture. They are dyed-in-the-wool money-savers."

THE GLIDDEN COMPANY
AVIATION SALES HEADQUARTERS
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Representing Southwest Airmotive, Abilene Aviation offers immediate delivery from its complete stock of Glidair Finishes and other aircraft supplies.

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THE SIGN OF THE *Flying Red Horse*

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SERVES EVERY PETROLEUM NEED OF AMERICA'S AIR INDUSTRY

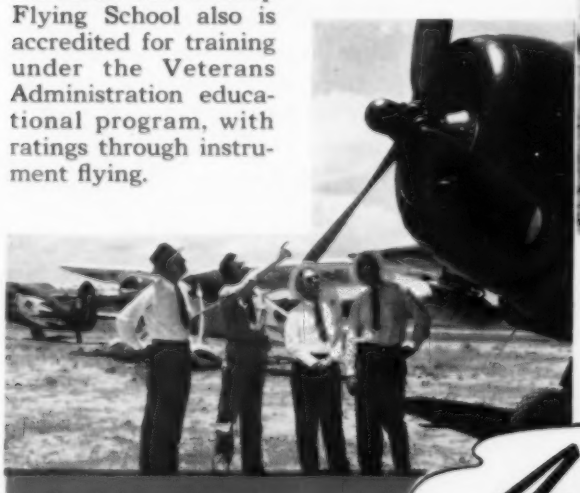
D. W. BISHOP and HIS LEWISVILLE AIRPORT

A Combination That Works

The importance of small airports to farming areas and their value to the aviation industry in promoting the use of personal planes, is being demonstrated by D. W. Bishop at his airport and Flying School at Lewisville, Texas. Located in a farming area, Mr. Bishop has been teaching farmers to fly and already a number of them are using planes in their farming business. The Bishop Flying School also is accredited for training under the Veterans Administration educational program, with ratings through instrument flying.

Bill Smid, flight instructor at the Bishop Flying School, signs log book for Flying Student Bun Pierce (center), with Mr. Bishop an interested spectator.

Mrs. Nola Grasty, office secretary at the Lewisville Airport, takes a lesson in prop swinging from D. W. Bishop, owner and operator, just in case some customer might need a bit of help when the field force is occupied elsewhere.



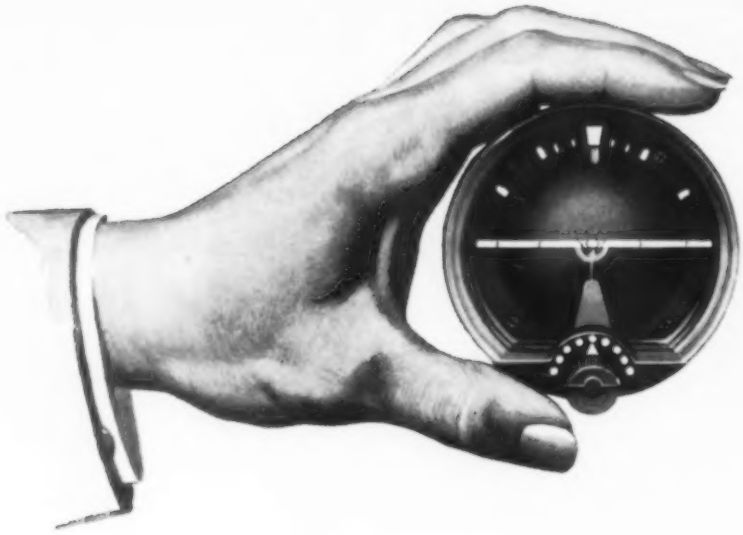
VETERAN BOMBER VISITS NACOGDOCHES

This TBD Naval torpedo bomber, which has a magnificent record for missions against Japanese shipping, stopped recently at the Nacogdoches Airport. Looking it over (left to right) are: Harry Hobbs, assistant manager, Houston District, Magnolia Petroleum Company; J. L. Norton, flight instructor for E. T. Crawford, operator of the Airport; J. T. Bonner, territory salesman for Magnolia; and Perry Campbell, Magnolia consignee at Nacogdoches.

FORWARD WITH *Aviation*

Mobilgas AIRCRAFT — Mobiloil AERO

MAGNOLIA PETROLEUM COMPANY



The new Sperry H-3 Gyro-Horizon...

This small-size electric flight instrument provides the same attitude indication that has been universally accepted. In addition, the Model H-3 has increased pitch sensitivity to aid the pilot in maintaining precise *attitude control* under conditions of poor visibility or "blind flying."

...paired with the new Sperry C-2 Gyrosyn Compass...

This dependable team mate of the Gyro-Horizon is the pilot's pathfinder. It synchronizes with the earth's magnetic field to give extremely accurate *directional indications* under all conditions of air turbulence. Equipped with either rotating dial or pointer indicator.

...can be grouped for pilot's convenience

These new Sperry flight instruments adapt readily to modern instrument grouping, have no flight limitations, are non-tumbling, need no caging devices. Designed for standard 3⅛ inch panel cut-out, wholly electric (AC), free of brushes. Simple, compact, light-weight, precision-built.

. . .

AND IN THE MARINE FIELD,
Sperry Gyro-Compass is paired with Sperry Gyro-Pilot to set a ship on the straightest, shortest course, then steer that course automatically.

Sperry Gyroscope Company, Inc.

EXECUTIVE OFFICES: GREAT NECK, NEW YORK • DIVISION OF THE SPERRY CORPORATION

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JULY, 1947 VOL. XXVIII, NO. 1

Southern FLIGHT

Including MODERN AIRPORTS

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Revolutionary new Decker Wheel Pants are so rugged they'll easily support a heavy man, *weigh less* and *cost less* than ordinary, flimsy wheel pants.

Decker Wheel Pants are especially designed for Cessnas and Luscombes, dress up your plane, give full protection on the ground, reduce drag in air. **$69.50**

Both these outstanding Decker accessories are available through your aircraft accessory supplier. Or write Dept. SF-7

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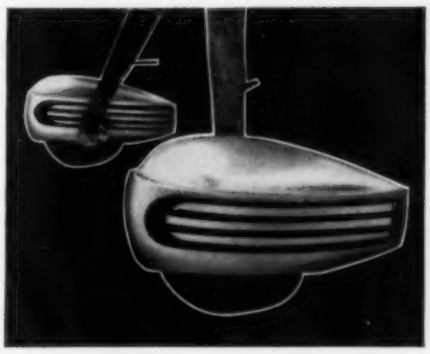

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ANOTHER AVIATION EXPERT PREFERS Esso

"because I like to have things right..."

says J. Wayde Stewart
owner of Stewart Airport Company
Parkersburg, West Virginia

"Because I like to have things right, I am an ESSO Aviation Dealer.

"I know that I can sell ESSO Aviation Products with confidence that the quality is right and that it will always remain that way. I know the ESSO dependability because I have known ESSO Products for years.

"ESSO Aviation Dealer service is right, too. And that is also important. Because of it, I can give my customers attention that will keep them coming back for more. To a great extent the future of private flying is going to depend upon smooth servicing of private planes.

"These things together with the enormous and well earned customer acceptance of the ESSO name are the reasons for my choice of ESSO."

Signed: J. WAYDE STEWART

J. WAYDE STEWART got his start in aviation in 1923. Although too young to accept a commission, he attended Officers' Training School at Chanute Field in Illinois. In 1932 he started private flying and in 1936 bought the Parkersburg Municipal Airport.

Mr. Stewart has been Treasurer of First Region, National Aviation Trades Association; conducted Civilian Pilot Training programs before the war and War Service Training programs during the war with one of the largest schools in the country. He is also distributor for ERCOUPE in West Virginia—Kentucky—Ohio and dealer for North American "Navion."

J. Wayde Stewart, knowing aviation from the ground shops to the planes in the air, prefers Esso Aviation Products . . . because he likes things RIGHT . . . and knows he gets *right service* backed by *right quality* and *right aviation research* with ESSO AVIATION PRODUCTS!

Just among ourselves

EDITORIALS

THROUGH THE EYES OF A FISH

IN a speech before the 5th Annual Airport Management Conference at Texas A. & M. College last month, Bob Fogg, veteran seaplane pilot and enterprising sales executive of the Edo Aircraft Corporation, told how he convinced the city fathers of Fort Worth that they should provide a few dollars for the establishment of a seaplane ramp at nearby Lake Worth. War clouds were gathering over Europe at that time. Shortly after the construction of the inexpensive ramp, Britain placed a large order for Consolidated flying boats. Consolidated of San Diego took out their maps and searched for a refueling stop in mid-America. The Lake Worth seaplane ramp stuck out like a sore thumb. It became the fueling stop for the delivery flights; the city of Fort Worth paid for the seaplane base on profits every time a ship gassed up. Today, Consolidated is building B-36's on the shores of Lake Worth.

Not long ago at a city council meeting in Oklahoma City, John H. Burke, operator of Wiley Post Airport, argued for the right to build a modest seaplane ramp on the shores of a city lake bordering his field. Local sportsmen, mostly fishermen, fought the proposal because, they said, seaplanes would ruin the fishing in the lake. Mr. Burke's classic remark was, "If we look at the future of community aviation through the eyes of a fish, we don't hold out much hope."

Now the fishermen on Lake Worth have never complained about seaplane operations interfering with their sport; yet they are in a better position than the Oklahoma City Isaac Waltons to hold forth on the subject. Likewise it is inconceivable that a city as air conscious as the Oklahoma capital, former home of the National Aviation Clinic, seat of the CAA standardization center, home of Tinker Field, birthplace of Braniff International Airways, should countenance any attempt to throttle aviation development.

Oklahoma City is but one of many examples where water sportsmen have managed to deprive communities of water flying facilities. In most cases their antagonism has sprung from ignorance or unwarranted prejudice with no regard for the many instances where sensible regulations and rules of the road permit the full utilization of water areas by everybody, including airmen. Unfortunately, the sportsmen forget that the airplane, more than any other single factor, is contributing immeasurably to the protection and preservation of fish and wild life. From stocking streams, lakes and rivers to law enforcement and wild life census counts, the modern seaplane and amphibian are at work every day in the year at the job of making North America a sportsman's paradise.

We in aviation have a terrific job of selling to do among our sportsmen brethren. If their present antagonism against water flying continues, there is grave danger that one of our richest opportunities for aviation development will be nipped in the bud. Surely American sportsmen can not be classed with the cranks who build their houses right next to an airport, then raise hell with the city to zone it out of business because airplanes are "noisy and dangerous gadgets" as one antagonist recently put it. There are far too many closed airports over the landscape as monuments to such dirty work. Let's not permit it to happen on the undeveloped millions of acres of water areas where natural airports (which don't cost the public a penny) can be utilized tomorrow for our amphibians and float planes.

PROPER PERSPECTIVE

IT'S impossible to travel the length and breadth of this nation without being impressed by the obvious fact that aviation is being sold short largely by people in aviation. The sad financial condition of many aviation companies, both large and small, makes for a more acute situation than would prevail under ordinary circumstances. Bad news has an unfortunate facility for fast travel; we can't afford to have it expedited by people within our own ranks—especially if we are to gain and hold public acceptance and patronage.

We must root out the nefarious practice of rumor mongering and the over-indulged-in hobby of cutting a competitor's throat by discrediting his product, character, condition or service. Otherwise we can't expect much progress in whipping our many common problems. It's ironical that at a time of transitional crisis we have vicious elements within our midst who are willing to tear down their own house in order to wreck the house of someone else. If it isn't a competitor who's on the pan, our numerous destructive brethren turn their guns on individuals, companies or on government aviation agencies whose programs for the benefit of all aviation are effective only in proportion to the interest and co-operation of the people affected. Those who squawk the loudest generally come under the category of people who never take time to analyze specific problems or lend any constructive suggestions or criticisms for aviation's general welfare.

If you want specific instances to show what we mean, here are two that are symbolic. A sales manager of a large aircraft manufacturing enterprise told us about one of his regional field representatives who has been making it a point to put in a good word for and to avoid any detrimental statements about competitive products. Soon after the representative went to work letters began to come in to the sales office commenting on the fact that the new approach actually had been a factor in closing sales. Many letters revealed the interesting fact that never before had the prospective customers met an airplane salesman who failed to run down a competitor or his product. The salesman's name is Bill Perry and he sells Republic Seabees.

(Continued on page 20)

Revving Up

WITH fast, clean lightplanes reaching the market in large numbers, accident reports increasingly tell of damage suffered from wing structure failure. In a recent Oklahoma accident, fatal to four, witnesses said the aircraft "exploded" in the air —pieces of structure were strewn over a couple of miles. The truth is that the right wing failed and struck the empennage as it folded and from there disintegration was progressive. Cause of the wing failure was abrupt elevator pull-up at 150 mph., the pilot apparently applying back pressure when, letting down through an overcast, he suddenly found himself diving steeply at an altitude of only 200 feet.

Private fliers should learn to respect fast airplanes whose clean design results in very rapid acceleration once the nose is lowered. Diving speeds of 180 and 200 mph. are attainable within a matter of seconds and at high speeds the wings can be pulled off even the sturdiest of airplanes. It's all a matter of physics and kinetic energy. Wing overload is proportional to the square of the ratio of the airplane's momentary flying speed to its stalling speed. For example, if the plane stalls at 50 mph., an overload of 9 times normal can be produced at 3 times the stall speed, or 150 mph. In the same plane, the overload jumps to 16 times normal at a speed of 200 mph., and to 36 times normal at 300 mph.

Structural hazards are also encountered in rough air while cruising in level flight. Upward and downward accelerations caused by unstable or "bumpy" air are governed by the laws of kinetic energy, the structural stress imposed by any particular gust of air being proportional to the square of the speed at which the aircraft is traveling. The wing structures of all airplanes are designed to have ample safety factors to meet any gust condition ordinarily experienced at normal cruising speed. But if excessive speed is used, the safety factor rapidly diminishes in accordance with the square ratio of increasing kinetic energy. For instance, if a gust acceleration load were 3.5 times normal stress at 200 mph., the structural safety factor remaining would be about 1.7 to 1. But the same gust would produce an acceleration load of 7 times normal stress at 282 mph., and the structural safety factor would then be less than zero, resulting in failure of the wing structure. However, by slowing down from 200 mph. to 141 mph., gust acceleration loads will be more than halved, and a gust which would leave a structural safety factor of only 1.7 at 200 mph. will leave a structural safety factor of 3.4 at 141 mph.

Technique for Safety

These examples of kinetic force have been cited by Beech Aircraft Corp., in a handy pamphlet published for pilots. They are cited here to impress on all pilots the necessity of respecting aircraft speed and structural limitations. Competent cross-country pilots will throttle back for exceptional gusty conditions in cruising attitude, and competent instrument pilots will let down through instrument weather well within safety limitations. But unskilled pilots acquiring fast, clean aircraft now on the market will be wise to obtain ample dual instruction for thorough familiarization with the critical limitations of high-performance private planes. Says Beech:

If an untrained pilot finds himself on top of a solid cloud mass through which he must descend, he should

(Continued on page 52)

MAKE MONEY — SAVE MONEY IN THE PLANE THAT GIVES YOU . . . *More for your Money*

THE CESSNA 140, illustrated on the front cover of this issue and described on the opposite page—has been proved by owner-usage the country over as one of the most productive assets to the conduct of present day business. There's no question about it, the Cessna is a cross-country airplane, a performer, and a low-cost mode of efficient travel.

These distributors (or one of their dealers nearest you) are anxious to demonstrate this fact to you. It will cost you nothing but your time to let them.

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TOMCO AVIATION, INC.

FRED THOMSON, President

Business office and showroom on San Antonio Municipal Airport

Storage, Mobilgas, service, repairs, and parts on Stinson Field. Oldest operating CAA approved school in San Antonio. G.I. Flight Training—private, commercial, instructor, instrument, multi-engine.

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Aircraft sales, service, parts and repairs.

Texas (Panhandle to the Rio Grande)

SOUTH PLAINS AIRCRAFT

Municipal Airport, Lubbock *(Telephone* 8216)

Owned and operated by James J. Vickers and Tom N. Hutchinson. Sales, Service and complete facilities for repair and training.

Also See the New

CESSNA 195 and 190

AIRLINE SPEED

AIRLINE COMFORT

in Your Own 4-place Personal or Company Plane.

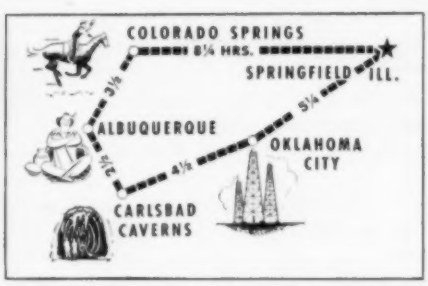
Again Cessna gives you *More for Your Money!* These new 4-place all-metal planes with the famous Cessna cantilever wing offer big-plane luxury and performance at surprisingly low cost. The 195—with its 300 H. P. Jacobs Engine—has a top speed of over 180 m. p. h.; a range of over 700 miles . . . carries up to 200 lbs. of luggage. The 190 is basically the same and offers comparable performance with a 240 H. P. Continental Engine. Ideal for personal or *charter* use!

THANKS TO THE PLANE THAT GIVES YOU *More for your Money!*

There's no end to the far-away places you can visit—the exciting things you can see and do—when you own a shiny new Cessna 140 or 120!

For here, at last, are practical, 2-place, cross-country airplanes . . . at light "training plane" prices (only $3245 and $2695* f. o. b. Wichita). Both give you over 120 m. p. h. top speed, 450-mile non-stop range, all-metal structure and many comfort and safety "extras". Anyone who can drive can learn to fly them. *And gas, oil, service and depreciation run about the same as on a family car.* Convenient time payments. See them!

All Aboard for points West! There's plenty of room for luggage (up to 80 lbs.). Or a comfortable seat for children can be installed easily in Cessna's roomy luggage compartment.



Trips like this are easy in a Cessna. Owners report they average nicely over 100 m. p. h. and get over 20 miles per gallon from the 25 gallons of fuel in Cessna's twin wing tanks.

More comfort for your money! Beautiful upholstery. Adjustable foam rubber seats. Directional ventilation. New sound-proofing which permits normal conversation in flight!

More safety, too! Cessna's patented safety landing gear absorbs shocks—helps smooth rough fields. And the 140 is equipped with full-range wing flaps for safer landings.

Cessna's beautiful instrument panel is shock-mounted for longer instrument life, greater accuracy. Note extra leg room, too, in the comfortable Cessna cabin.

Also See the New

CESSNA 195 and 190

AIRLINE SPEED, AIRLINE COMFORT

in Your Own 4—5 place Personal or Company Plane!

Big, fast, luxurious . . . yet surprisingly economical to own and operate! Both are all metal. Both have the famous Cessna cantilever wing and patented safety landing gear. The 195, equipped with a 300 H. P. Jacobs Engine, has a top speed of over 180 m. p. h.—a range of over 700 miles—carries 200 lbs. of luggage. (Or five people, if you're traveling light.) The 190 offers comparable performance with a 240 H. P. Continental Engine. Ideal for personal or charter use.

*The 120 *is the ideal training and utility plane. Less luxurious than the 140 and not equipped with starter, battery, generator or flaps.*

Cessna

THE PILOT'S AIRPLANE

MAIL THIS COUPON NOW..

Cessna Aircraft Company, Dept. SF, Wichita, Kansas

Please send free literature giving complete description of the Cessna 190, 195 ☐ Cessna 120, 140 ☐ Additional material for model builders ☐

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CUB - STINSON - SEABEE
Dealers for Dallas

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THIS TEAM is looked on as "a couple of miracle men." They provide hangar storage for purchasers of new Cubs, Stinsons and Seabees—right on White Rock Airport, only six miles from downtown Dallas. And they have a reputation for handling trade-ins on a good allowance basis, because they continually beat the bushes to locate buyers of used planes. . . . That, and a simple Club Plan which they developed, accounts for their ranking as one of Aircraft Sales Company's most successful dealers. People like their accommodating attitude; nothing is too much trouble for this pair, if it will make flying more profitable and pleasant for their customers. . . . In addition to aircraft sales, service, storage, maintenance, Parker-Huett Aviation is affiliated with White Rock Aviation School, operators of a complete G.I. Flight Training Program.

(This is one of a monthly series whose purpose is to acquaint you with members of AIRCRAFT SALES COMPANY'S *dealer organization.)*

Strictly a sales and service organization, established seven years ago, and dedicated to good customer relations . . . Serving as liaison between the manufacturer and the ultimate consumer, through a closely-knit dealer organization . . . Maintaining for aircraft dealers and operators large stocks of aircraft and engine parts, equipment and supplies — and an immediate shipment policy on large and small orders . . . . All phases of maintenance and repair . . . Aircraft and Engine Repair Depot No. 1177.

AIRCRAFT SALES CO.

6-5491
MEACHAM FIELD

6-5492
FT. WORTH, TEXAS

San Antonio Branch: **Stinson Field**

AIR Report

SIGNIFICANT TRENDS IN THE NEWS

Fact From Fancy

All manufacturers of 2-place aircraft except Aeronca (at work on an Army order) halted their production lines at one time or another in June. One factory's explanation blamed an indefinite closure to "poor weather and other factors." Another justified the halt for a "vacation." Market saturation still exists, 2-place sales decreased sharply, along with demand. Unordered airplanes were filling the factory yards. So production lines were shut down until the lots could be cleared, until new demand justified new production.

★ ★ ★

Culver Assets Purchased

Superior Aircraft Company at the Wichita, Kansas, Municipal Airport has been established by Robert C. Faris, former general purchasing agent for the defunct Culver Aircraft Corp., and W. W. Taylor, former Culver test pilot and sales executive, who assure Culver owners of continued parts and maintenance service and who may market the Model V-1 modification of the Model V, after reworking the elevator and stripping the fuselage of about 200 lbs. of weight. The V-1 has already been modified with a straight wing, a better flap and more effective elevator action. In purchasing Culver assets last month, Faris and Taylor said they acquired a $750,000 inventory of assemblies, parts and materials from which about 40 V-1's can readily be assembled. The inventory is stored now in a Boeing warehouse in Wichita.

★ ★ ★

Swift and Navion Deals

Don't expect Ryan Aeronautical Corp., and Texas Engineering and Manufacturing Co., Inc., which last month acquired the Navion and Swift projects, respectively, to start hastily grinding out new airplanes in the immediate future. Both realize the effects of market saturation. The major significance in their operations is that neither the Navion nor the Swift will be allowed to become an "orphan" airplane—Ryan and Temco will establish adequate, competent parts and maintenance service for Navion and Swift owners as their first objective. After protecting owners and distributors and dealers in this way, both will consider new production, but not until the market justifies it.

★ ★ ★

Stinson Cutback; Bonanza Price Stability

Stinson, still outselling all lightplanes including 2-seaters, does not have the capacity to sustain deliveries in the volume of May's 319 deliveries and future months will reflect a smaller volume. Some of the April-May deliveries were from a factory storage, occasioned earlier in the year when paint shop congestion clogged the yard. . . . With observers still labeling the Bonanza as a "$10,000 airplane," Beech Aircraft Corp. last month confirmed its established $7,975 price through the summer. Production in June was stepped up to 7 Bonanzas daily with 10 as the next daily objective.

★ ★ ★

Ratings for Dusters?

Suggestions for special pilot ratings for airmen engaged in dusting, spraying, fertilizing and planting crops by airplane cropped up in a meeting in Little Rock last month, called by the Arkansas Extension Service and Flying Farmers Association. Agriculture experts and Arkansas dusters discussed problems including damage suits arising

(Continued on page 53)

The Birdmen's Perch

By *Major Al Williams,* ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Okay, here's the story we promised you:

The oldest pilot in the United States is Starr Nelson, of Delta, Colorado.

He's not 50. He's not 60. He's not 70.

Mr. Nelson is 80 years old!

He received his license at the age of 75. Before that he was an engineer on the "Rio Grande"; before that, a cowpuncher.

Nelson owns his own airport in Delta, which is in a valley. Just to get out of the valley Nelson has to climb 13,000 ft. in his two-control ship!

Frequently he flies to L.A. simply to attend a dance.

A widower, Nelson has five children, 17 grandchildren and two great-grandchildren. To Mr. Nelson we flap our Tattered Wing Tips in honest admiration and hope that his offsprings are as capable and competent pilots, and in as good physical condition, when they hit 80.

(We hope we are too!)

Mr. Nelson—just by being Mr. Nelson—has qualified for a Perch Pilot Commission, for our dough.

We're sending it today.

HOW TO LOSE A LOT OF OIL

Every year we lose a lot of oil at our refinery. Actually we throw it away!

Sounds odd? Well, here's the story:

When we make Gulfpride Oil we refine good crudes by normal refining methods. The oil we get is as good as many you'll find on the market.

But this oil is not good enough to be labeled "Gulfpride." So what do we do?

We put this refined oil through the Alchlor process—an extra step that eliminates up to 15% of the oil. This 15% has the characteristics of tar—and would form carbon and sludge in your engine.

Because we take out more of the carbon and sludge formers, Gulfpride is the purest oil you can put in your engine.

Sure, the Alchlor process loses us a whale of a lot of oil . . . but the better oil it does make makes a whale of a lot of friends for Gulfpride.

And to us, that makes it worth it!

LITTLE KNOWN FACTS DEPT.

Let's get going:

"Glider-towing C-47's stretched from 6 to 8 inches!"

That's a "Little Known Fact About Well Known Planes." It came from Robert Besse, Springville, N. Y. Because it was interesting enough to print . . . and because Mr. Besse *sent proof* of his "Fact," we are sending him a commission as Perch Pilot (bottom rung).

"Despite increased speed and greater lift of the outside wing, it is not the high wing in a spin!"

Robert G. Sommer, Gainesville, Fla. gets a commission for that one. *He sent proof, too.*

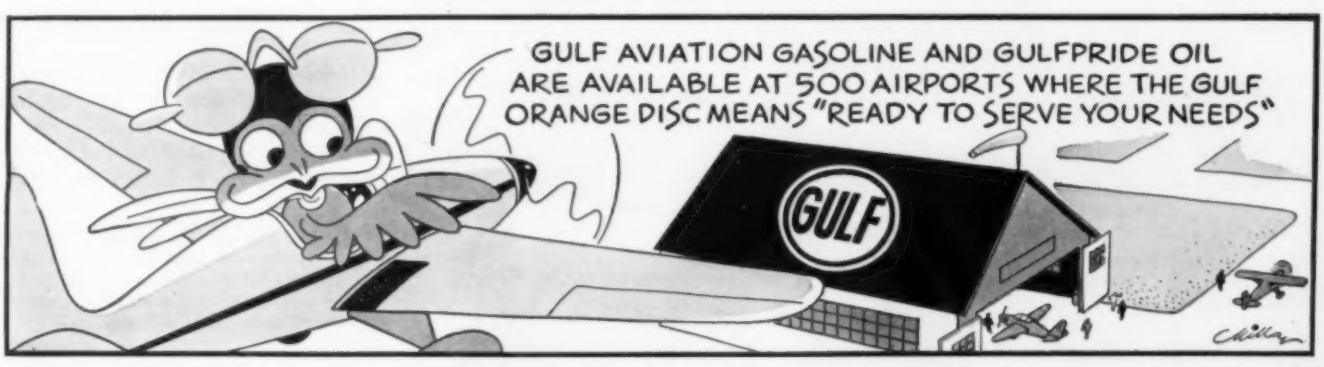
Donald Ogilvy, Scarsdale, N. Y., gets the third Perch Pilot's Commission this month with:

"Eight airlines carried 104,980 passengers across the Atlantic in '46!"

That's all there is to it. And after 5 "Facts" have been accepted, we promote you to Senior Perch Pilot. So mail in your "Fact," today!

Gulf Oil Corporation and Gulf Refining Company... makers of

GULF AVIATION PRODUCTS


GULF AVIATION GASOLINE AND GULFPRIDE OIL ARE AVAILABLE AT 500 AIRPORTS WHERE THE GULF ORANGE DISC MEANS "READY TO SERVE YOUR NEEDS"
GULF

Low-Cost Single

TEST Pilot Bill Taylor circled the little Kansas strip at 90, glided steeply down with flaps and gear lowered to cross the fence at 70. He turned into the ramp after a roll of only 240 feet.

"Sweet as a bee in the air but we need better climbing," he suggested as Designer Al W. Mooney ambled over. "That engine's a honey."

Mooney's newest design—his 18th—had completed its fifth flight. It was performing along the precise groove preliminary engineering had traced for it and finishing touches were being applied as flight testing dictated.

Designated Model M-18, Mooney's newest experimental is a significant approach to an innovation in private flying which has intrigued many observers—the much-discussed but not yet ventured single-seater. It is ultra small and ultra lightweight, weighing about 400 lbs. empty and grossing nearly 700 lbs. But its most outstanding feature is its power plant—a 4-cylinder Crosley delivering 25 hp.

Developed originally as an airborne auxiliary engine powering a generator, the Crosley has been extensively analyzed by Mooney in a 150-hr. bench test and in flight. It has a 2½-inch bore and 2¼-in. stroke, with a 44-cu. in. displacement and is produced in large quantities by Powell Crosley, the Cincinnati industrialist, for his small automobiles. Engine weight installed is 98 lbs. Steel cable wedge belts (similar to textile "V" belts) gear down the Crosley's high crankshaft speeds at a reduction ratio of 2.04 to 1 to drive the M-18's small propeller, which operates with a tip speed of only 550 feet per second for unusual quietness. The engine delivers maximum power at 4,100 rpm. It is liquid cooled, having a one-half sq. ft. radiator with a capacity of two quarts of Prestone mixed with two quarts of water.

The airplane is a low-wing with retracting tricycle gear and steerable nose wheel. With a fuselage length of 18 feet, it has a 27-ft. wing of 96 sq. ft. area. Wing loading is 7 lbs. per sq. ft. Mooney's retracting landing gear is operated by hand, requiring but slight pressure on a lever to raise it and trip-trigger action to lower it, High-lift, slotted flaps are hand operated.

The prototype is constructed of metal rearward to the back of the cockpit, with rear fuselage of plywood. Its wing is fabric-covered plywood. No decision has been made as to materials for the production model. It closely resembles a slightly scaled-down version of the PQ-14 radio-controlled target planes Mooney perfected for the Army and Navy, which were manufactured in quantity by Culver Aircraft Corp.

Liquid-cooled 25-hp. Crosley engine allows for narrow nose cowling on Mooney M-18. Note sturdy gear, retracted with hand lever. It weighs 400 lbs. empty, 700 lbs. gross, has 27-ft. wing.

Specifications and Performance

Preliminary specifications and sea level performance data released to date include the following:

Mooney Model M-18

Wing Span: 27 ft.
Wing Area: 96 sq. ft.
Fuselage Length: 18 ft.
Height: 62 in. (top of canopy from ground).
Empty Weight: 400 lbs.
Disposable Load: 300 lbs.
Gross Weight: 700 lbs.
Baggage: 50 lbs.
Fuel: 8 gals.
Range: 400 miles
Maximum Speed: Over 100 mph.
Cruising Speed: 90 mph. at 75 per cent power, 3,700 rpm.
Stalling Speed: 40 mph.
Take-off Distance: About 470 ft.*
Landing Run: 400 ft.*
Rate of Climb: 400 fpm.*
Ceiling: 13,000 ft.*

*These figures now being changed with design development.

Mooney and Taylor have verified the performance figures in preliminary flight-testing but frankly state improved rate-of-climb is needed and will be accomplished during the current

gle-Seater

Al Mooney's eighteenth design will explore the single-seater market potential with a 25-hp. engine, $1,000 - $1,500 price and 90 mph.

By GEORGE E. HADDAWAY

First photos show single-seater's resemblance to PQ-14's used as radio-controlled targets and designed by Mooney. At 90-mph. cruise, gas consumption is 1-2/3 gals. hourly. Note flaps.

flight-testing. Mooney wants a 600-fpm. climb at 60 mph. from power curve changes. He is also confident of raising the ceiling to 18,000 ft. at the same time.

"The idea of this airplane was born when I had occasion to visit Army and Navy installations during the war and observed the small, light and tough generator power plants used for electric power and operated on gasoline," he said. "These were ground, portable units for the most part, but some were also airborne. The thought occurred that here was a possible source of a low-priced, lightweight, quantity-produced power plant if an airplane having sufficient performance could be designed around one of them.

"As the power was in the order of 25 hp., the airplane would be a single-place type and moreover would have to be very clean and light. The single-place limit was considered no objection if the cost could be low enough as, in

effect, the project would open up a market as yet untouched. Other than to gather data on available engines, nothing more was done because of the press of work on the target drones, except for several preliminary design studies at odd times.

(Ed. Note: Mooney at the time was in charge of engineering at Culver Aircraft Corp., in the development and production of PQ radio-controlled target airplanes for the Army and Navy.)

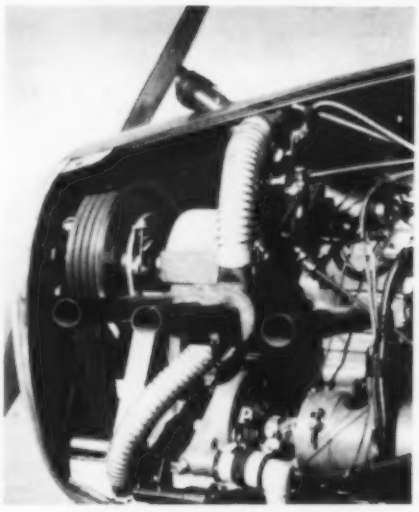
"At the same time, due to the many stability problems encountered in making radio-controlled airplanes fly satisfactorily without pilots, and as a result of lessons learned in their solution, the idea of interconnected controls (later named 'Simplifly') was originated. Near the end of the war, it was decided by Culver to build an experimental two-place aircraft around this idea to evaluate its possibilities in private test flying, with no publicity planned until it had proven itself. This turned out to be the Culver Model V.

Simplifly Unfinished

"Shortly after V-J Day the V flew. Problems of perfecting it were many but did not appear impossible, given time. But an upheaval in management occurred a few days later. What had started as a daring research experiment, with a no-publicity policy and with the understanding it would be shelved if its many problems could not be solved in adequate time, suddenly became a design, development and production 'must' under the pressure of limited time.

"Objectively, the V and 'simplifly' should be examined separately. As for the airplane, its major handicap was that it was a couple of hundred pounds too heavy. As for 'simplifly,' it was well developed with the power-on condition, but needed a great deal more research for the power-off condition, a fact which was not readily evident at first. As has since become obvious, the combination of these two factors prevented attainment of all the performance latent in the basic design.

"Meanwhile, four of us had decided to develop a single-place airplane. The others: C. G. Yankey, A. B. Mooney, W. L. McMahon—all veterans of better than 20 years in aircraft manufacturing. In June, 1946, we started the Mooney Aircraft Co., to develop our ideas, determining first to be efficient but not to work against time. This would be one design in which all the time required would be available. Mr. Yankey and I visited several plants where generator engines were made and finally decided to use the Crosley engine, which was originally developed as an airborne generator engine but which



Four-cylinder Crosley has 98-lb. installed weight, 44-cu. in. displacement, is rated at 25 hp. at 4,100 rpm. and a wedge belt (similar to V belt) reduction gear ratio of 2.04 to 1. Plan is to offer reconditioned engine for $50 plus old engine.

was now being used to power the Crosley auto. We selected it because of its advanced light design, its demonstrated toughness and its promise of very low cost.

"We set four objectives:

"1. To evaluate the Crosley engine for ruggedness.

"2. To design a very clean and light single-place airplane along the lines, but smaller, of the highly successful PQ-14.

"3. To evaluate the performance and cost of such an airplane-engine combination.

"4. Finally, to approve and build several airplanes to allot to people we believe in to evaluate the market.

Tests Reveal Problems

"We have since evaluated the engine. Along with these tests we tested our propeller drive, using multiple Goodyear steel cable wedge belts and other necessary alterations to the engine. The engine program has been witnessed by the CAA. The only serious handicap was in exhaust valve burning. But then we used auto fuel and standard valves. With modifications suggested by Crosley and with better valves, which are available, we are confident the engine will easily meet CAA endurance test requirements.

"We are equipping the Crosley engine with dual ignition as required for the final run. We will use 80 octane aviation fuel, at least for the immediate future.

"Our preliminary evaluation of the airplane shows that we have substantially succeeded in designing a clean airplane and have held our weight to the stated limit. On all the fine points of control, cockpit arrangement and the like we have much work to do but those items are not basic.

"To properly evaluate and develop the latent utility of the combination we have started a program of flight and co-ordinated ground testing on the power plant, to fit its power curve to the airplane for the best overall results, stressing short take-off and steep climb. The propeller enters into this and Walt Burnham is designing one for us. We feel we have more control over the variables than we have ever had on earlier projects and in time can do an excellent job. There's no reason for rushing the project.

"Our basic data has been furnished CAA in completeness and we are expecting to run the official static tests in the next few weeks. Most important, we are now making a careful production study of the airplane with the hope of arriving at a practical selling price in various quantities.

"We are sufficiently encouraged by the results at this time that we have purchased 80 acres of land and are erecting a pilot plant of a main building with offices, a hangar and an engine test house. Upon approval we intend to build a moderate quantity of airplanes for a combined service test and market evaluation program. Again, I stress, there is no hurry; our evaluations will be complete."

Mooney indicated he may license the M-18 in two models, one with conventional 3-control and the other with a new and improved 'simplifly' interconnected control system, in which the elevator and flap are operated together through a single control. "Regarding 'simplifly'," he said, "I believe simple control is as inevitable as it was on radio receivers, regardless of what the so-called experts might say. I am as sold on its possibilities as ever. This new single-seater is a vehicle which will show off a properly developed system to its best advantage. We probably will also have the airplane available as a normal utility category airplane and let nature take its course."

Flying for Pennies

Using Mooney's specifications and performance data, the figures offer an interesting study in low-cost flying. Fuel consumption of 1⅔ gals. per hour at a 90-mph. cruising speed, for example, indicates 54 miles to the gallon of 28-cent gasoline, or, when a few cents for oil are added, a per-mile cost of about six-tenths of a cent. Mooney expects to be able to arrange an engine exchange deal in which an old engine with about $50 will get a reconditioned engine, as substitute for overhaul. On the basis of ten cents per hour for engine trade-in plus about the same

(Continued on page 36)

New Aeronca Super Chief with 85-hp. Continental engine has built-up dorsal fin as distinguishing exterior marking. Author found its climb outstanding, averaged 95-mph. cruise at 2,350 rpm. —Aeronca Photo.

Aeronca Super Chief

Aeronca's new 85 proves impressive on cross-country analysis, with comfortable cruise and exceptional short - field performance.

By JOE JAMES

"COME on up heah and see a really air-minded town!" The voice from deep in the heart of Arkansas was that of Earl Ricks, former ATC Colonel, now Mayor of Hot Springs.

We were not receptive to say the least. Hot Springs, from all we heard, is a place where people go primarily to get in hot water—and sit. In late June, Texas is hot enough. But the cool, kind Colonel was persuasive. "Either you boys fly up," he hinted, "or I'll crank my Howard and come after you." That did it. The last balky passengers Ricks went after not only lost face but agreed to surrender the Japanese empire. Ricks is the ATC skipper who flew the first Nip surrender party to Manila from Okinawa. We hurriedly agreed to fly up in a spanking-new 85-hp. Aeronca Super Chief.

Leaving White Rock Airport, near Dallas, at 7:20 on a cloudy Thursday morning, we levelled off at 700 feet just below low-hanging scud, then banked to the northeast. Twenty-five minutes and forty miles later, low-hanging clouds faded and we flew into bright sunshine.

Leisurely we eased the yellow-and-brown Super Chief up to 3,000 feet, using three-quarter throttle. There's always too much to remember on that first check-out and it's not until you get a plane out on a trip that you really get to know it. For instance, climbing at 60 mph., the 85-hp. Aeronca practically goes straight up.

Two hundred feet above cruise altitude, we eased the nose over and gradually settled down to 3,000 feet. Throttling back to 2,350 rpm., we moved the overhead tab forward until no pressure was needed to keep the nose where it belonged. Like most 85-hp. planes, the Aeronca's nose is well below the horizon in cruise attitude. Up here at 3,000, air speed fidgeted between 85 and 90 mph. Outside air was about 20 degrees C., which made true air speed roughly 90-96 mph.

At Texarkana, we dropped down to sneak under close-packed cumulus clouds, crossed the Red River at Fulton, and then climbed into a cloudless sky. Off to our left, a huge airport sprawled in the early morning sun. This was Hope Municipal, at Hope, Arkansas (SOUTHERN FLIGHT, June) and a good place to check our ground speed. The 189-mile distance from Dallas had taken us 1 hr. and 51 minutes, or an average ground speed of 102 miles per hour. Since we had time to spare, we landed for a coke and a chat with Talbot Field, Hope's aviation attorney. No one was expecting us but we got service that's hard to beat anywhere.

"You can cut straight across to Hot Springs from here if you want to," Field told us, "but the country gets pretty rugged. The safest route is to go on to Arkadelphia, then head due North to Hot Springs."

This turned out to be good advice for anyone approaching from the Southwest. There are plenty of places to land along this route and, if you have at least 3,000 feet when you turn North, you always have a spot to land in easy gliding distance. The short cut will carry you over forests as thick as the hair on a cat.

A few miles north of Arkadelphia, you can see Hot Springs snuggled among low hills. At its very feet are two huge lakes, their cobalt blue waters indicating depths ranging as deep as one to three hundred feet. Coming in from the South, you fly over an inspiring sight—densely wooded hills, vast stretches of water, and the clean, hotel-dotted spa on the slopes.

And the private flier who visits Hot Springs will find the town has more to offer than just curative waters. Average temperature here in the picturesque Ouachita Mountains is 65 degrees F. Altitude varies from 500

Super Chief furnished by factory is shown here at Hot Springs, Ark., Memorial Field on test trip. Author James is at right below describing the trip to the spa's flying mayor, Earl Ricks, ex-AAF colonel, who flew Japan's surrender mission to Manila and who is putting the Arkansas resort's municipal affairs in order after winning the election three months ago.
(SOUTHERN FLIGHT Photos.)

feet above sea level in the valleys to 1,200 on the "mountain" summits. The air is fresh and clean. Approaching by plane, you see no pall of dirty smoke hovering over the city.

Like most fishing spots, the lakes are good when conditions are right. Deep water complicates matters during the warm months. Bass stay in deep water and even deep-running bait may get little attention. In the early morning and late evening, however, white bass often school on the surface.

We first visited the Mayor's home high in the hills fringing the town limits. "I've lived here eleven years with my family," the ex-GI confided. "But when they gave me this job, they put my house out of bounds." A city ordinance, he explained, requires that the Mayor live in city limits. Dutifully, Ricks acquired a second home in town.

After a motor trip over scenic drives reminiscent of the Great Smokies, we stopped at one of Hot Springs' most beautiful lake homes. Perched high on a prominent finger of land, surrounded by water on three sides, the house was the kind people dream about. "Here's where the Lyells live," Ricks explained. "I keep my boat down the hill. We'll take a run on the lake and come back here to pick up Van, Jr., when he gets off from work."

We hurried down stone steps to a long boathouse, found the Colonel's Higgins cruiser rocking peacefully with a smaller boat for company. Getting under way, we seemed to cruise for hours and still covered only a small portion of the vast waterways. We passed under huge bridges; skirted banks lined with beautiful homes—little of which had been visible from our airplane. Near one, we saw a silvery Seabee parked on a tiny concrete ramp at the water's edge—for all the world like one of Republic's ads. Up ahead, a float Piper banked easily and headed into the wind for a water landing. It touched water, rocked along for a moment, and then skipped off with spray flying.

"How about a hamburger," Ricks asked. "We'll get a bite to eat, then stop by the house and see if Van, Jr., is home." Heeling the cruiser about, he headed for the Hot Springs Seaplane Base, where the houseboat office rocked lazily at its moorings. Easing the cruiser alongside, we crossed the deck and entered an eating place perched on stilts at the water's very edge. The Cub pilot was there ahead of us, his plane moored at the nearby dock.

"Well, let's go back and see if we can find Van, Jr.," Ricks suggested as we finished our meal and headed for the cruiser. A few minutes later, however, Van, Jr., found us. He picked a fine time to do it, too. After stopping at the house to find Van was not around, we spotted a cluster of boats far out in the lake. "Come on," Ricks shouted, "they've located a school."

Unlimbering our casting rods, we sneaked into the group with motor cut and made our first cast. Just as our spoons hit the water a sudden roar caused us to wince. A BT-13 roared overhead, banked gracefully, and raced back, lower this time. We stopped casting while the bass continued to skip and flounce. The on-coming BT-13 had every indication of a "buzz job" in the making. Instead, the pilot eased down half flaps, expertly chopped the power, and shouted, "You boys are wastin' your time!"

"That," the Mayor announced laconically, "is Van, Jr."

Later we learned young Lyell is a former AAF pilot and one of many plane owners in Hot Springs. The place is literally a flying town—with a flying Mayor to boot. In fact, the Chamber of Commerce will tell you it operated the airport for a long time before the city took it over—truly an air-minded place. We saw another example of this while we were admiring the splendid terminal at Memorial Field. A local business man came in with a visitor from Atlanta, Ga. "I want this gentleman to get a real look at our beautiful city and lake," he told airport manager Ralph Disheroon. "Have you got a plane handy?"

"And who," we asked, "is that air-minded citizen?"

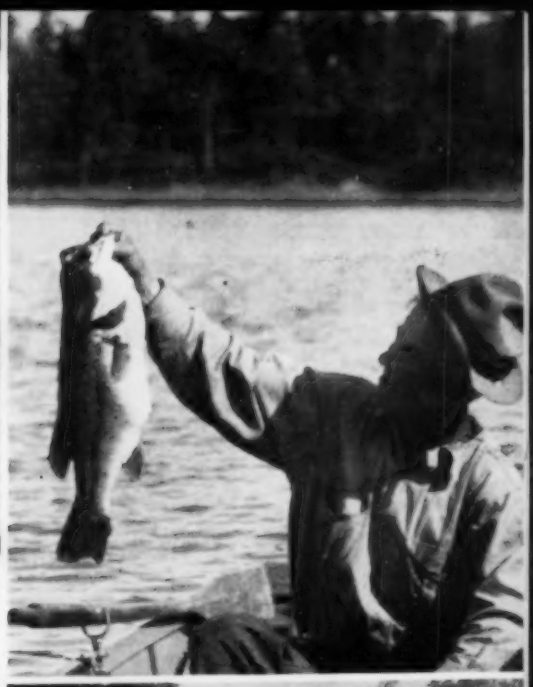
"That is Van Lyell, Sr.," the Mayor chuckled.

In passing, we should mention that horse racing in season brings thousands to this mountain spa and accounts for a large number of the 200,000 annual visitors. But in spite of a heavy tourist load, accommodations are priced no higher than elsewhere and you can be fairly sure of a place to stay. Our reservation at the Majestic Hotel was made one day in advance.

You'll find plenty of courts and cabins, too. If you plan a trip there, a note to the Chamber of Commerce will get the information you need about where to stay.

Time passes quickly when you're enjoying it. Before we knew it, it was time to head for home. Our hospitality hadn't run out, for Miss Alta Smith of the Chamber of Commerce was waiting to drive us to the airport. You probably won't be that lucky, but a

(Continued on page 36)



Water sports abound at Hot Springs, as this scene on Lake Hamilton shows. At right is a 6-lb. bass caught nearby.

RESORT for FLIERS

AIRCRAFT owners and users searching for a place to go for entertainment or relaxation will find Hot Springs National Park in the Arkansas foothills ideal for their pleasures.

It proved to be for SOUTHERN FLIGHT staffers who trip-tested a new Aeronca Super Chief and Hot Springs' resort facilities simultaneously last month. They found top-notch facilities at Memorial Field, where Manager Ralph Disheroon will gladly make hotel, fishing, hunting or sightseeing arrangements for visitors.

There are over 200 hotels, furnished apartments, hospitals, motor courts, cottages, dude ranches, camps, rooming and boarding houses at price ranges to suit every purse. Its chief asset is the curative water flowing from 47 government-owned mineral springs whose waters relieve the sick and keep the physically fit well. There are sixteen pay bath houses operated under government regulations.

There are many other attractions. Hot Springs is distinctive in being both a mountain retreat and a lakeside resort, surrounded as it is by Lakes Catherine and Hamilton, with shoreline totalling 340 miles, and the pine-covered Ouachita Mountains. The lakes, with the Ouachita River, are noted for large mouth and small mouth bass, white bass, wall-eyed pike, crappie, bream and other pan fish. Boats, guides and tackle are available at a long list of landings. Boats run from fifty cents per day for skiffs to $10 per hour for large cruisers with crews. Water sports include skiing, swimming, night trips and float plane flying, there being aircraft and instructors at the Hot Springs Seaplane Base, operated by Virgil East and Frank Stroud.

A variety of nightclubs and Oaklawn Park, nationally-famous horse racing track, offer other attractions.

An air-minded city, Hot Springs has a flying mayor—Earl Ricks, former Air Transport Command colonel long identified with civil aviation in Arkansas. Memorial Field is a $2,500,000 Class III airport with two paved runways 4,100 by 150 ft. and one of the finest terminal buildings in the Southwest. Operators there include Middleton Flying Service (Cessna), John Stover Air Service (Piper), Elliott Flying Service (Aeronca) and Spa Flying Service (Luscombe). The Chamber of Commerce maintained Hot Springs' airport as early as 1916 to assure the spa a place in aviation. ★ ★ ★

Wading for bass and bream in colorful Ouachita River (above right) and other mountain streams is popular. At right is Hot Springs Seaplane Base, with a Seabee on the ramp. Memorial Field (below) lies between Lakes Hamilton and Catherine and the city, with 4,100-ft. runways and clear approaches.

Its 46-ft. 7-in. vertical fin too high even for the world's largest aircraft factory at Fort Worth, one of more than 100 of the 139-ton B-36's built or on order must be eased off the production line with its nose hoisted and tail down. Wing span is 230 ft., length 163 ft. —(Convair Photo.)

Skill, Courage and Money

Our newest combat planes impose incredible demands from laboratories to flight, require new appraisal of air power needs

By TOM ASHLEY

IN a 5,000-mile tour in Army and Navy planes last month, aviation writers saw most of America's latest experimental aircraft in a display which could easily have been mistaken for new strength for vigorously-progressive air power. In fact, it was a parade of left-overs from war-launched laboratories now stripped by unbalanced defense "economies" which have slashed U. S. air forces and aircraft manufacturers far below minimum defense requirements.

But despite the gloom of realism the impact was tremendous to see performances by supersonic research planes with stalling speeds of 140 mph., jet bombers approaching the B-29's size but capable of 500-mph. speeds, the amazing Northrop Flying Wing, a drone P-80 flown by remote controls, a television screen on the ground showing the instrument panel of a P-82 as it was maneuvered 20 miles away, the mammoth B-36's amazing short take-off and landing ability, Lockheed's large Constitution with powered wheels and many other marvels. These were not secrets; some incorporated devices and ideas used long before by the Germans and British and others had aged five to ten years in engineering and production. But to see them was to awaken to their revolutionary promise and their costly demands in skill, courage and money.

Most of the demonstrations were performed at Muroc Army Air Field, where a 7-mile long runway on the hard-packed lake bed has saved many lives and several one-of-a-kind prototype aircraft—more evidence of the limitless demands of modern air research. The transport we rode—Secretary of War Patterson's—landed in the first fourteenth of that runway and taxied the remaining 6½ miles of its length. In contrast, the Bell XS-1, which flew for us, needed much of the strip for its landing.

Youthful, unassuming Slick Goodlin, Bell test pilot, was not allowed to say more about the XS-1 than has already been published except that he has stalled it and won't glide under 180 mph. Not intended for supersonic speeds in its present design and equipment, the XS-1 is a laboratory craft from which others will be developed before speeds of 1,000-mph. and more will be attempted. The schedule is slow and painstaking and will take months before supersonic attempts. Meanwhile, Goodlin will work with Paul Mantz in movie stunting and will offer his services as a technical adviser to the movies.

Jet Bombers Have Fighter Speeds

Supersonic speeds, which also involve the Douglas D-558 Skystreak, will be possible only with swept wings, it was indicated. Neither the Bell, powered by a rocket engine with four tubes which can be fired singly or simultaneously, nor the D-558, powered by a jet engine, has swept wings at present. Two unannounced jet airplanes, a Boeing heavy bomber with auxiliary jet engines at each wingtip in addition to its main power plants, and a North American fighter have swept wings and might attain higher speeds than those already flown by the Bell and Douglas.

Consolidated Vultee XB-46 and North American XB-45 four-jet bombers were more impressive than the supersonic experimentals at Muroc, at least to us. Of the two the 46 is the fastest looking, with its long, needle-shaped fuselage, its very thin wing and its cleaner lines in general, including its engine nacelles. It is also the larger, grossing 91,000 lbs., about 9,000 lbs. more than the 45. Described as being in the "500-mph. category," the XB-46 required a long take-off but despite its

size performed like a fighter as it was climbed, dived and banked low over the runway.

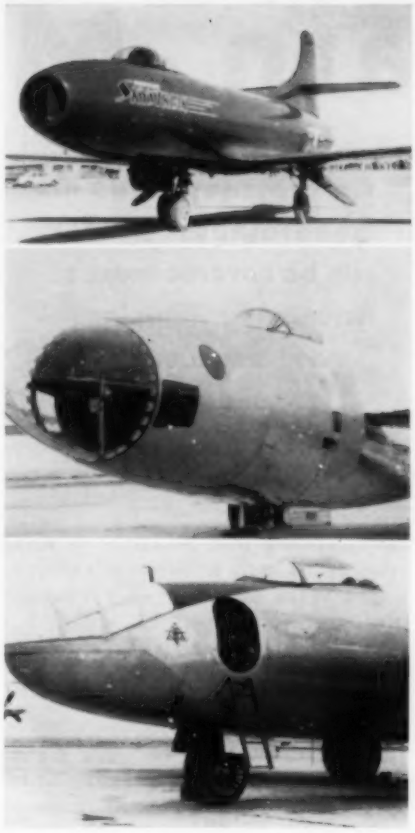
Jet bombers (Glenn L. Martin has since flown his six-jet XB-48 at Baltimore) will revolutionize bombing tactics with their speed and range. Both are crewed by only 3 men. Pilot and co-pilot ride tandem and the co-pilot is more of a gunner, navigator and radio operator than a pilot. The third man is bombardier. Radar, armament and fuel fill the rest of the fuselage.

Launch, Retrieve Own Fighters

After watching the XS-1 dropped from a B-29 over Muroc, it was not difficult to picture Convair's B-36 carrying its own fighting planes as we climbed through it in Fort Worth. Plans call for such fighters to be launched from B-36 bomb bays by a hook-and-line rig, which would also retrieve the parasite fighters after they complete their mission. The retrieve apparently would be similar to the system used by the Navy when aircraft operated off of dirigibles before the war. B-36 escorts would have folding wings for stowage in the bomb bays. They would have no landing gear wheels.

Its maximum bomb load is 72,000 lbs. at a range of over 4,000 miles. It is said to be capable of carrying a smaller bomb load, 10,000 lbs., a maximum range of 10,000 miles. Fuel tanks which are integral and thus not bullet proof, but which are covered by self-sealing panels installed beneath and on the sides (but not on top) after the wing is constructed, have a 21,000-gal. capacity.

The Army has ordered 100 B-36's in addition to the thirteen already on order and being produced on a gargantuan assembly-line scale. As distinguished from the XB-36, the production model has four-wheeled landing gear trucks instead of the prototype's single 110-in. diameter main wheels, and its pilot's cabin, formerly rounded into the nose, has been modified into a huge blister-type cabin, protruding above the fuselage to permit wingtip and rear visibility for formation flying. Main gun turrets atop the B-36 are installed on large elevators for retraction into the fuselage, with powered "gun bay" doors similar to those on bomb bays closing over the wells.



Study in noses groups (top down) Douglas supersonic D-558 prototype, Convair XB-46 4-jet bomber, North American XB-45 4-jet bomber, whose inaugural flight test projects were viewed at Muroc last month. —(SOUTHERN FLIGHT Photos.)

The most amazing thing about the XB-36 is its short take-off and landing characteristics. Test Pilot Beryl Erickson pulled the nose off within what appeared to be 1,000 feet of runway, hoisted it about ten feet into the air while the tail almost touched the pavement, and became airborne within 2,500 or 3,000 feet. He stopped his landing roll with reversed propellers within 4,000 feet. All the while he was grossing 238,000 lbs. It was the XB-36's eighteenth test flight. Top speed is "over 300 mph. at 30,000 ft." Its six 3,000-hp. Pratt & Whitney pusher engines will eventually be replaced by six turbines of 5,000 hp. each, and with them top speed is to be "over 400 mph. at 30,000 ft."

Newest very heavy bomber in production, the B-36 is actually almost 7 years old. The most costly war in history, which included direst threats to U. S. security since the Revolutionary War, was waged for four years and had been concluded one year before the giant was completed. Into it had gone millions of man-hours in engineering and production—it is the most expensive military airplane ever built.

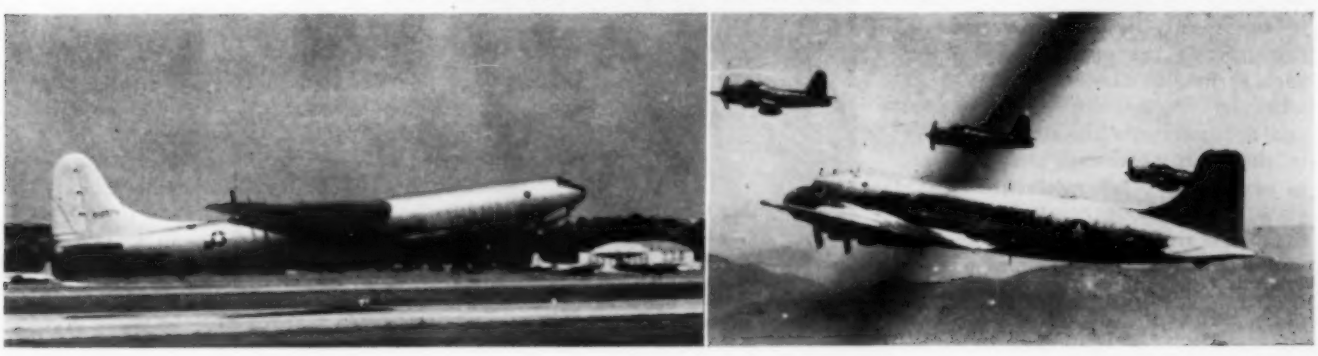
Such facts emphasize the complexities and demands inherent in modern air power, whose lessons in World War II have been forgotten or ignored even while occupation forces attempt to stabilize hard-won U. S. victory zones.

America's air power is not in the three XB, YB and B-36's now flying or nearly ready to fly. It's not in the XS-1 and D-558. Or the one XB-45 or the one XB-46 or the one XB-48 now flying. These are but promising symbols of air power, which exists only in the remnants of once-powerful B-29, B-25, A-26, P-51 and P-47 AAF Groups, plus a few operational P-80's, and aboard a few Navy carriers; they are mere examples of the air power resources in once developed but now stripped aircraft factories—grim reminders of vulnerability and neglect.

The British are ahead of us in re-equipping their squadrons with jet aircraft. Russia is far ahead with guided missiles, appropriating more German scientists and materiel than we did, and with numerical airplane strength and industrial activity.

But despite these facts and the growing U. S.-Russian controversy, American airpower continues to deteriorate through neglect of the essentials which once made it all-powerful. ★ ★ ★

Writers on air power tour saw 6-engine XB-36 (left) take off from Fort Worth runway within about 3,000 ft. at 238,000 lb. gross. Photo at right, made from NATS transports flying writers from Oakland to Burbank, shows formation of Navy fighter squadron's Ryan Fireballs racing past with props feathered, jets burning. —(SOUTHERN FLIGHT Photos.)



Mountain Monarch

An attorney finds his mountainous territory can be covered more efficiently by lightplane—and explains how and why.

By VIRGIL QUINLISK

MOUNTAINOUS areas, particularly those which embrace lumbering, ranching, mining and farming and where dude ranches and sports clubs have achieved the status of big business, are becoming more and more the kingdom of the lightplane.

These doughty little craft with their low landing speeds, their sturdy construction, their simplicity of control, low purchase and operational costs and adaptability to stern requirements of rugged terrain, are moving quietly but steadily to the head of the individual transport class.

Their invasion of the field of personal transportation is evidenced among many professions and callings. Flying farmers have organized in Idaho and others are active in Montana and Washington. If there are not others doing so elsewhere in the Rocky Mountain states, it will not be long until they will.

The lightplane's utility really comes into its own when applied to travel in mountainous areas. It is being proved daily by ever-increasing numbers of private airplanes. Aircraft manufacturers' sales reports show that distributors and dealers in prosperous Northwest areas are actually leading the plains areas in some cases.

There are factors involved in movement of all forms of transportation in mountainous areas which are not known in the plains areas. It is these factors, plus the safety, dependability and economic characteristics of the lightplane which are propelling it to supremacy.

Take the experiences of Henry Felton, Moscow, Idaho, attorney, now batting somewhere around the age of 45-50. Felton handles law matters regularly at widely-separated county seats. He has clients scattered over an area described by a 250-mile radius.

How Mountains Favor Planes

Until July, 1946, he had made his rounds by automobile, bus and train. It was mostly done by car, though, since one of the prime factors influencing public carriers is the time schedule. Busses, for the most part and because roads are not the luxury in the great northwest that they are in plains and other mountainous sections of our country, follow pretty much the same highways used by private cars. Many bus operations offer only one schedule each way a day. And because this type of transportation is thinly spread, it is necessary to make stops at all little settlements and even a few fence corners. This necessity, plus the slower time a loaded bus makes on grades, allows the private car to run circles around the bus.

An automobile is preferable to trains and in the great majority of instances, the only alternative—rail lines are indeed a scarcity. The time drag so far as the trains are concerned, is much more pronounced than in the case of busses. In addition to inconvenient departures and arrivals, trains lead one far afield before arriving at or near the destination. To get to Lewiston, Idaho, from Boise, for instance, the train route leads through Portland, which is about as far from Lewiston as Boise.

Henry Felton, Idaho attorney, and his Cessna 140.

But just as the automobile is superior to busses and trains, so the lightplane is superior to the automobile, a relatively obscure truth in the flat countries where terrain is no hindrance to the laying of road beds.

"Records I kept in the first few weeks were so amazing they confused me a little," Felton recalls. "I kept waiting for the catch to show up. I knew some of the benefits I hoped to gain by switching to the air. It took that sort of thing to sell me on a plane. But what gets me is that I not only found those benefits, but just about every trip has revealed some new, unexpected one. I've been flying eight months now and I'm still running into reasons to make me glad my business sprouted wings. I use this baby for fishing and hunting, too, you know." Felton was having lunch at Lewiston when he made that comment. He was leisurely flying back to Moscow after transacting business at Grangeville and at Lewiston that morning.

Less Distance, More Speed

Here are some of the things about Felton's plane, a Cessna 140 (he took to the air first in a trainer but after three months bought his $3,500 Cessna equipped with primary instruments and two-way radio):

From Moscow to Grangeville is 120 miles by road. Because of the deep canyon it takes just a little over three hours to drive it by car, providing the weather and roads are good. If he had several hours of work to do at Grangeville, or should be held up by other court cases for an hour or so, a business trip to the Idaho county seat meant getting back home late at night or else stopping over at Grangeville or some intermediate point. If he had a single hour's work to do there, the very best he could do was seven hours, or the loss of a day's work for the sake of one hour.

With his Cessna, flight cuts the distance to 70 miles. The time drops to 40 minutes. So what does he do? Unless he has a morning schedule at Grangeville, he works in his office until noon, flies to Grangeville after lunch, does his hour's work and is back in his office before five to do more work or just loaf. Furthermore, he vows, the flight is relaxing and, contrary to the end of a three-hour tortuous drive by

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car, he is ready for whatever needs to be done. And, he adds, the round trip by plane has taken about half the amount of gasoline required by car. The oil is about equal.

Frequently, Felton goes to Boise. Boise is 300 miles by highway and 231 by air. Where it takes 10 hours to make the trip by car, Felton does it in his plane in 2¼ hours. He goes down to San Francisco every once in a while. By car, that trip is about 1,000 miles from Moscow and it takes two days. By plane the distance is around 700 miles and Felton makes it in about 7½ hours.

Weather Wisdom

The vast difference in distance and speed between ground and air travel has a bearing upon what is popularly believed to be the most important factor influencing the year-around use of aircraft in mountainous areas—weather.

It goes without saying there are fewer flying days over mountains, especially in winter, than there are over the plains. But here's where, in Felton's experience, the plane pays off handsomely. "When you use a plane, you can afford to wait out the weather. I have found you can almost always depend on making better time than by car. And while you're waiting, you are at your office doing something useful and not spending that time en route," he explained.

It is significant, he believes, that in his eight months of business flying he has had to set down away from home only once. That was this winter when he had to leave his plane at Orofino over night.

Felton estimates the operational and upkeep expenses of his plane to be approximately equal to those of his automobile. That estimate is derived from a mile-for-mile comparison which means, in his mountainous territory, substantially lower destination-to-destination costs in the use of the plane. Few indeed are the trips where air mileage is not from half to sometimes two-thirds less than ground mileage.

His records show he gets right at 20 miles per gallon of gas. He changes oil (four quarts) every 25 hours. Airplane gasoline runs about 27 cents per gallon. So does automobile gasoline by the time a six-cent tax is paid. There is some difference in cost of oils but that is absorbed in favor of the plane due to the more frequent replenishment and changes in a car used for mountain travel.

In the matter of insurance, Felton is spending a little more than $20 a month which gives him fire, theft, public liability and property damage and ground protection. Hangar rent at his home port at Moscow is $10 a month. Though it is not to be calculated as a custom, there are few airports in the area which make a tie-down or hangar charge overnight if the plane refuels or takes other service. Some airport operators invite free use of their spots as goodwill gestures beamed at garnering as much of the ever-increasing private plane traffic as possible. However, in those ports where parking charges are made, they average about a dollar to a dollar and a half a night. Also, Felton has found that nearly all of the private airports in the territory see to it that there is free transportation from port into town. Here again, where it is necessary to hire transportation, the cost averages about a dollar each way.

And what about safety? Here Felton became emphatic. "My plane is safer than my car. Anyone who operates on any sizeable distance scale in this country the year around knows the danger of driving on wet or icy highways heavy with traffic and all too frequently shrouded by fog." He feels that the apprehension many persons feel toward mountain flying is due to the unfortunate experience some major airlines have had with widely publicized accidents. They apply that apprehension to lightplanes which, in Felton's book, is wrong. In the first place individual flights are flexible as to schedule. The lightplane can land safely in small areas where larger ones can not. The boys who fly in the mountains "fly" their ships with care and caution and alert regard for conditions every minute of the time. They keep pilot error at a minimum and the little planes do the rest. Those are the two best reasons why the lightplane is today rapidly becoming the monarch of the mountains. ★ ★ ★

Airmen's Calendar

July 4-20 — 14th Annual National Soaring Meet, Wichita Falls, Texas.

July 16—CAA Private Flying Forum for South Carolina, Columbia.

August 7-9—National Flying Farmers Association convention, Stillwater, Okla.

Aug. 18-22—USC Short Course for Airport Managers and Owners, Hancock Field, Santa Maria, Calif.

Aug. 30-Sept. 1—21st Annual National Air Races, Cleveland, Ohio.

Sept. 15-17—Air Force Association convention, Columbus, Ohio.

Sept. 16-18—Second Region CAA operators conference, Atlanta, Ga.

Oct. 3-4—Arizona State Aviation conference, Douglas.

Oct. 24-26—Air Day in Texas, Harlingen, Texas.

Oct. 26-28—National Association of State Aviation officials, Ft. Worth, Tex.

Nov. 19-22—5th Annual National Aviation Clinic, Illinois state capitol, Springfield, Ill.

JUST AMONG OURSELVES

(Continued from page 5)

Another example that admirably points up the disease now reaching epidemic proportions within our own household may be found in the unfortunate public utterances emanating from the Airline Pilots Association regarding air safety. Not one of these statements reveals any genuine interest in the arduous task of solving a knotty problem utilizing all the knowledge, science, skill and co-operation humanly possible to muster. Rather, ALPA as an organization takes the peculiar attitude their only job is to place the blame for recent accidents on the government and industry. It's defensive strategy that is undermining public confidence in the industry, which includes public confidence in our airline pilots. No finer group of men exist than the airline pilots. But their association is selling them down the river because it is obviously more interested in making wild accusations than it is in getting to the nub of the problem.

Aviation isn't strong enough to absorb all the short-selling and thoughtless bickering afflicting it. There's a limit to abuse beyond which it suffers in the public eye to the detriment of all.

What all of us need to do as we go into the second six months of a tough transitional year is to take stock of ourselves and adopt a healthier perspective. After all there is a lot of good things going on in the industry which point to stability and a return to normal business with normal pressures replacing the cataclysmic shocks that have always been symptomatic of immediate postwar years. Congress is gradually beginning to recognize the intolerable condition of our national defense structure, especially in the air. The airlines have seen their toughest reconversion days and are rapidly readjusting their operations to conform to public convenience and necessity instead of military convenience and necessity. Personal airplanes, which only a few months ago were on the "orphan" list, such as the Navion, Swift, Culver and Taylorcraft, have been taken over by other companies who can provide service and improved design for owners and prospective owners. As one observer remarked, we've had one hell of a year of bad weather and now, even the weather is getting better! We don't have to play Pollyanna to find optimistic straws in the wind. All we need to do is to change our perspective and get back to the basic principles and factors that made our industry great. It didn't grow into its present stature by people selling it short. ★ ★ ★

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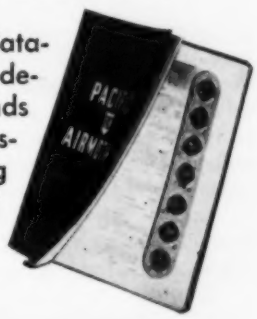

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STALLS and SPINS

Because an airplane can be spun from any attitude and at any speed, it demands technique to detect and correct.

By A. H. KNOUFF

IS your stomach hopping like a jitterbug as you look forward to your first lesson on stalls and spins? Or are you looking back on it with relief and smug satisfaction that you have met these bogeymen and mastered them? In either case, you have the wrong idea. Stalls and spins are not dangerous in a modern commercial airplane—*unless they sneak up on you.*

Fliers learned how to recover from spins more than 30 years ago. Federal regulations have for years required that airplanes recover "hands off" from spins. Yet stalls and spins still head the list of causes of fatal accidents. Knowing how to recover from a stall or spin isn't enough. You have to know when to do it.

Your lessons in spins may give you the idea that you must slow the airplane by pulling the nose up pretty high, push the rudder all the way and hold the stick back hard. But listen again to the words of the late great Tex Rankin: *An airplane can be spun from any attitude and any air speed.*

Yes, that includes straight and level flight at cruising speed. An airplane gets its lift from the smooth flow of air over its wings. This lift must be equal to the load it is carrying. Anything which disturbs the smoothness of the airflow or increases the load may make the airplane stall. This may be caused in straight and level flight by a sudden severe gust of wind striking the airplane from a new direction. It can also happen when the airplane is flying into a headwind and the wind velocity is sharply reduced. Even a strong updraft may cause your airplane to stall. The pilot has no way of knowing exactly what trick of the atmosphere produced a stall.

This can be boiled down to one simple problem if you understand the angle of attack. I call it the angle at which the air strikes the wing. The amount of lift which any particular wing will produce at each angle of attack is found by experiments in a wind tunnel. The results are plotted on a graph, as in Civil Aeronautics Bulletin No. 26, *Aerodynamics for Pilots.* Increasing the angle of attack will increase the lift—as long as the air flows smoothly over both the top and bottom of the wing. As the angle becomes greater, the air has to turn a sharper corner in order to follow the surface. Finally the corner becomes so sharp that the air can't make it and skids off somewhere. Other air flows in to take its place, but this new air comes from the wrong direction and will not flow smoothly either. The angle of attack at which this occurs is called the *burble point* or *stalling angle.* Increasing the angle of attack beyond this point will decrease the lift very rapidly.

It is important to remember that the angle of attack has nothing to do with the attitude of the airplane in relation to the ground or the position of the nose in relation to the horizon.

When the angle of attack of one wing is greater than that of the other, and both are greater than the stalling angle, the airplane will spin toward the wing having the largest angle of attack. Your job is first to equalize the two angles, and then to reduce both of them to less than the stalling angle. Pushing on the rudder opposite to the direction you are spinning will throw the dropping wing forward in the direction the nose is pointed, reducing the relative angle at which it meets the air. The wing having the least angle of attack is thrown backward, increasing its angle of attack. This brings the two angles closer together. Next you reduce the angle of attack of both wings by pushing the stick forward and holding it there until the air speed reaches that used in a normal glide. Then, and only then, allow the stick to ease back until the airplane is flying level.

Relax and Recover

Most airplanes will recover from intentional practice spins if you merely relax on the controls. In fact, you may have to hold back pressure on the stick to prevent diving out with excessive speed. For some reason this does not always work in accidental spins. Because of this, you had better learn to definitely push the controls whenever you get the mushy or sinky feeling that hints you are stalling. I used to scoff at such violent measures in lightplanes until I got into a flat spin in an airplane which had been accidentally warped out of rig.

But knowing how to recover from a spin will do you no good unless you know when you are spinning. No matter how much experience you have, a spin may sneak up on you. Pilots with thousands of hours have spun in and a few of them have lived to say they did not know they were spinning. We have spun intentionally while teaching experienced pilots what to expect beginners to do. Unless we let the spin go more than one turn, they did not know we had been in a spin.

Your best insurance is to expect to spin any time, but there are situations in which stalls and spins are more likely to happen or will be more dangerous than others. You should know and avoid these conditions. Accident reports do not often mention airplanes which were flying straight and level two or three thousand feet above the ground. The words "turn" and "low altitude" almost always describe what the pilot was doing just before the crash.

You are more likely to stall out of a turn because you have to increase your angle of attack to make the total lift equal to both centrifugal force and the weight of the airplane. This brings it nearer the stalling angle. The extra forces also mean that the airplane has to carry a load greater than its normal weight—which increases the stalling speed.

Your instructor may be one of the many who advise you to drop the nose a little to gain air speed when you start a turn. He should also tell you that the increased speed will increase the centrifugal force so that you can't turn as sharply without banking steeper and pulling back harder on the stick. I think it is safer to let the nose drop only enough to keep your air speed constant, and to start turning sooner, so that the bank can be as gentle as possible. In normal flight, it should never be necessary to bank more than 30 degrees. This only increases the load on the airplane 15 per cent and the stalling speed 7 per cent.

(Continued on page 54)

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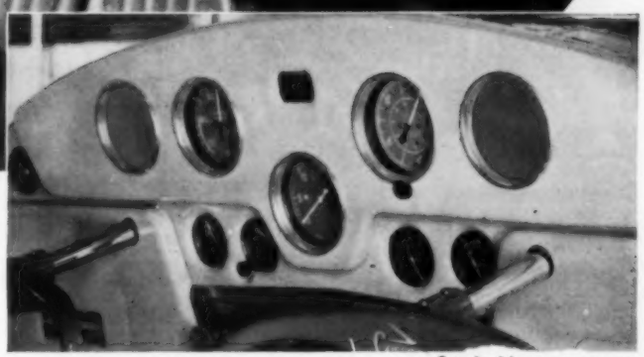

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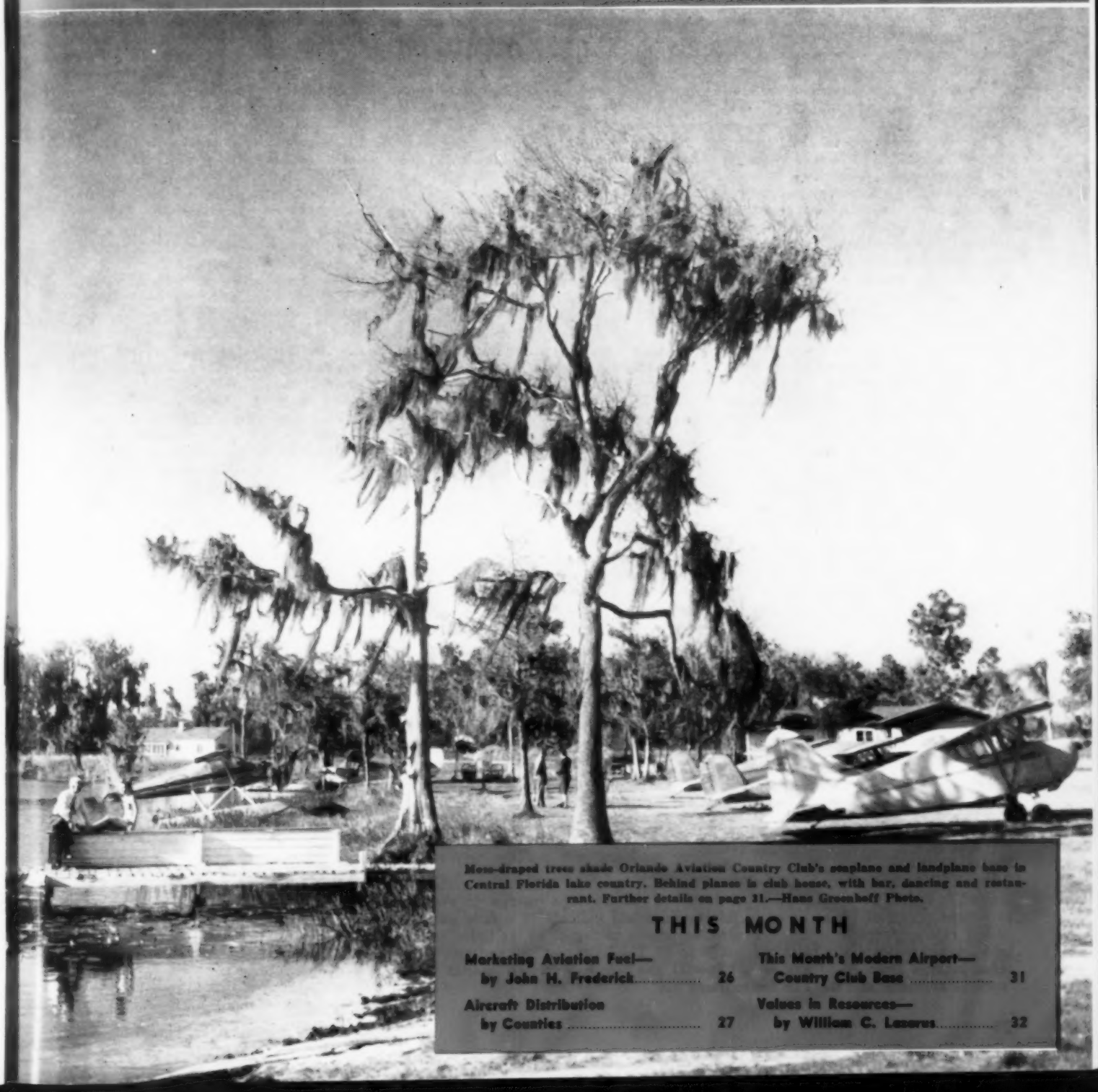
VOL. VII, NO. 5 JULY, 1947

Modern AIRPORTS



Moss-draped trees shade Orlando Aviation Country Club's seaplane and landplane base in Central Florida lake country. Behind planes is club house, with bar, dancing and restaurant. Further details on page 31.—Hans Groenhoff Photo.

THIS MONTH

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Marketing Aviation Fuel

This brief study of aviation fuel development underlines problems to be considered in marketing on airports.

By JOHN H. FREDERICK

AS late as 1928, aviation gasoline was nothing more than what was known as "straight-run" gasoline of high volatility. In other words, it was a regular refinery gasoline produced by straight refining and possibly by the addition of high-volatility natural gasoline. Little attention had been paid to anti-knock value, which at that time was in no way standardized. That year, the United States Army Air Corps asked the refinery technicians to develop a fuel of high and standardized anti-knock value. It was held that if sufficient quantities of such a fuel could be obtained, it would be possible to develop substantially increased power from the same size of engine.

The real demand for higher octane-number fuels developed about 1935 and from that year until 1939, various synthetic processes were developed to produce selectively desirable isiparaffins in commercial quantities. In addition, the first commercial catalytic cracking plant was placed in operation in 1936, and experimental work was initiated on the utilization of catalytic base stock in aviation fuel.

During the period just prior to the war, therefore, there had been developed the necessary fuel background to permit a rapid expansion. We had available in limited quantities at least four major components of aviation fuel with which we are familiar today: namely, high quality straight-run gasoline, alkylate, hydrocodimer and catalytic base stock. Aviation fuel at the outbreak of the war was, however, still somewhat of a specialty product so far as the refining industry was concerned and only a few producers were engaged in its manufacture.

The war, of course, stimulated increased productivity to the point where, in 1945, a total of over a half million barrels of aviation fuel was being produced daily by 189 major refining units. Today many of these war engendered refining operations have been abandoned and new process schedules have been set up which will permit the production of a well-balanced, high-quality line of all petroleum products. Under present circumstances aviation fuel must assume its proper place with the other products, according to its volume demand and the peacetime economics of petroleum manufacture.

A good aviation fuel for today's market must possess the following minimum characteristics: (a) Freedom from water and other impurities, (b) freedom from corrosive constituents, (c) freedom from appreciable quantities of gum and gum-forming constituents, (d) correct volatility or range of boiling points, and (e) good anti-knock properties. All of these requirements must be met since a gasoline failing in any one of them is just as dangerous as a faulty engine or landing gear.

There is a good deal of misunderstanding about octane-number. It is nothing more than a "knock-rating" and signifies the percentage of iso-octane in a mixture with normal heptane and exactly matches the fuel under test in knock intensity when comparisons are made with other fuels. Iso-octane, an extract of petroleum, is high in anti-knock quality, whereas normal-heptane knocks badly. Varying degrees of anti-knock quality may be obtained by mixing the two products in different proportions. For example, 70 parts of iso-octane and 30 parts of normal-heptane give an anti-knock rating of 70 octane-number. The percentage of octane in the mixture gives the octane rating of the gasoline.

Today 73 octane fuel is the lowest grade used in aviation and it is significant to note that at least one of the major oil companies has already stopped producing and distributing this lowest grade. The more general use of 80 octane gasoline is evident from the accompanying Table I showing the number of airports in the United States storing the various octane ratings of aviation gasoline. The decrease in the number storing 100 octane-plus gasoline is understandable in view of the decrease in need for servicing military aircraft. It is possible that the trend in the increased use of 80 octane gasoline will continue for some time as it has been said that "80-octane gasoline is really as high a fuel rating as the current makes of engines in private flying require."

The importance of octane rating, from the standpoint of economy of plane operation, is very involved and space will not permit a detailed discussion here. However, it has been suggested that a maximum of five grades would prove satisfactory for every type of plane: 80 octane for light and medium aircraft, 91 for regular use, and 82 or 93 for special use in commercial planes engaged in main or feeder airline operations, 100 octane for military and air transport use, and a possibly higher grade for long-range trans-oceanic flying.

A number of forecasts of the demand for aviation gasoline have appeared in the past few years. Probably the most reliable was that made by a group of experts for the committee of the Senate investigating the petroleum resources in the United States a year or so ago. This forecast is shown in Table II. These figures can be contrasted with the prewar high, reached in 1941, of 535,752,000 gallons. The significant thing is that all this gallonage will have to be marketed through some sort of airport facilities.

In forecasting the demand for aviation gasoline, consideration must be

TABLE I

Number of United States Airports Storing Various Octane Ratings of Aviation Gasoline
(As of January 1 of Years Indicated)

Octane Rating	1944	1945	1946	1947
70	162	455	592	391
80	148	688	1184	1747
90	52	59	52	54
100 and over	32	26	27	22
80 and less	48	180	231	170
90 and less	92	131	161	468
100 and less	344	337	431	411
Special Gasoline	3	3	3	3

Source: CAA from Forms ACA-29A. The CAA machine tabulation system is limited in that it does not permit tabulation of exact octane ratings. In general, an octane rating of 70, as listed in this table, would indicate 73 octane gasoline or any ratings from 70 to 79. Likewise, an octane rating of 80, as listed in this table, would indicate any ratings from 80 to 89. The listing of "80 and less" indicates ratings from 80-89 and less. "Special gas" includes those special gases such as aromatic and the like for military use.

TABLE II

Aviation Gasoline Demand Forecast, 1950-1965

Year	Gallons Per Year
1950	1,533,000,000
1951-1955	1,916,250,000
1956-1960	2,682,750,000
1961-1965	3,066,000,000

given the use made of aircraft in private flying and other non-scheduled operations, in scheduled airline flying and in military operations. Forecasts for any of these operations are based upon many incalculables such as government actions and attitudes toward regulation, the volume of government funds — Federal, state and municipal — earmarked for the operation or improvement of airways and airports, the dispatch with which the National Airport Plan is carried out, the effect of a high or low level of industrial activity and the amount of money made available for aviation purposes.

Market Characteristics

In order to better understand the problems involved in marketing gasoline through airports it might be well to summarize some of the characteristics of the market for aviation petroleum products which frequently govern the solution arrived at for a particular situation. These are: (1) The petroleum industry must serve a great variety of customers with a great variety of products. In contrast to a manufacturer whose plant produces but one product, the marketer of aviation petroleum products has a number of things to sell such as several grades of gasoline and lubricants, hydraulic fluid, specialty oils and many more. Each of these products has a market in which there are conditions peculiar to it and so each product creates its own problems for the industry.

(2) The demand for gasoline and aviation lubricants is derived from the demand for air transportation. Such products are not purchased for separate consumption but are necessarily used along with the airplane. The consumption of such products is therefore directly affected by the price of planes themselves, by the travel habits of the American public and other factors.

(3) The market for aviation gasoline has expanded rapidly, particularly during the war, so that there has been no time for the industry to make long-range plans since all production and distribution facilities were used whether they were well located or not. This has created certain marketing problems which still have to be solved.

(4) The market for aviation gasoline must still be considered as a high-income market. The big consumers — the government and the airlines — must make huge capital investments in order to operate their equipment only a small part of the time. As the prices of personal-type planes are lowered and other obstacles to private flying are conquered, it is conceivable that the market for aviation gasoline may become a low-income market as is that for automobile gasoline. But this is far in the future.

(5) The market for aviation gasoline is a down-price market. For example: eleven years ago a gallon of 100-octane gasoline cost around $20, but in 1944 the contract cost to the United States Army and Navy was 16 cents a gallon.

(6) The market for aviation petroleum products is very extensive and widespread. In other words, the occasion for the purchase of gasoline may arise wherever planes fly. The location of the market is determined primarily, therefore, by the flow of traffic which is changing constantly over the years as new airports are built and population shifts.

(7) The market for aviation gasoline is a brand name market. The name of the company sponsoring the product is the name that identifies it in the purchaser's mind. This is in contrast to general merchandise stores where hundreds of items made by many manufacturers may be sold. Because of the association of brand and

(Continued on page 56)

634 Counties Base Over 25 Planes

SEVENTY-FIVE per cent of the nation's registered aircraft are based in only 20 per cent of the counties—634 counties with 25 or more airplanes having total aircraft registrations of 59,095. Counties basing 1 to 24 airplanes number 2,010 with total aircraft registrations of 15,898. Fourteen per cent of the counties, numbering 414, have not a single airplane registered. Los Angeles County ranks first with 3,534 airplanes.

California and Texas lead the states with 8,456 and 7,789 aircraft, respectively. Undistributed aircraft (still in manufacturer's ownership) numbering 4,370 bring the total registration in the U. S. to 80,348 airplanes.

These figures were revealed in Civil Aeronautics Administration aircraft registrations by counties as of January 1, 1947, just released and analyzed as follows by Air Market Data Service:

AIRCRAFT REGISTRATIONS AS OF JANUARY 1, 1947.

State	Total Registration	In Hands of Manufacturers	Counties With Over 25 Planes		Counties With 1-24 Planes		Counties Without Planes
Alabama	908	....	10	646	41	262	16
Arizona	885	....	5	748	9	137	....
Arkansas	899	....	10	574	49	325	16
California	8,456	66	38	8,191	18	199	2
Colorado	1,088	....	9	797	38	291	16
Connecticut	635	1	6	614	2	20	....
Delaware	215	6	3	209	....	....	....
Dist. of Columbia	986	....	....	....	....	....	....
Florida	2,572	....	19	2,366	38	206	10
Georgia	1,346	....	9	860	89	486	61
Idaho	545	....	7	352	36	193	1
Illinois	3,705	....	28	3,078	66	627	8
Indiana	2,269	....	22	1,632	65	637	5
Iowa	1,734	....	20	937	78	797	1
Kansas	2,410	502	18	1,151	84	757	3
Kentucky	686	....	4	384	74	302	42
Louisiana	760	....	4	491	43	269	17
Maine	491	....	6	391	10	100	....
Maryland	1,468	615	10	752	14	101	....
Massachusetts	1,255	....	12	1,238	2	17	....
Michigan	3,779	321	31	3,049	47	409	5
Minnesota	1,798	....	8	1,082	76	716	3
Mississippi	612	....	6	290	50	322	26
Missouri	2,171	....	12	1,625	87	546	1
Montana	656	....	5	300	46	356	5
Nebraska	1,139	....	7	516	78	623	8
Nevada	383	....	2	261	14	122	1
New Hampshire	244	....	5	156	5	88	....
New Jersey	1,393	....	19	1,360	2	33	....
New Mexico	617	....	6	430	21	187	4
New York	4,107	36	34	3,698	28	373	....
North Carolina	1,579	....	19	1,062	63	517	18
North Dakota	579	....	5	210	41	369	7
Ohio	4,448	1,120	27	2,646	60	682	1
Oklahoma	1,862	....	18	1,395	54	467	5
Oregon	1,227	....	11	955	24	272	1
Pennsylvania	3,838	111	40	3,411	26	316	1
Rhode Island	181	....	2	159	3	22	....
South Carolina	760	....	9	519	33	241	4
South Dakota	585	....	4	256	52	329	13
Tennessee	1,216	....	10	975	51	241	34
Texas	7,789	1,591	43	4,979	172	1,219	39
Utah	468	....	3	325	17	143	9
Vermont	144	....	2	59	10	85	2
Virginia	1,220	....	16	797	74	423	10
Washington	1,616	....	16	1,422	22	194	1
West Virginia	567	....	7	312	37	255	11
Wisconsin	1,731	....	24	1,328	41	403	6
Wyoming	326	1	3	107	20	219	1
Totals	80,348	4,370	634	59,095	2,010	15,898	414

AIR Reviews

JULY 1947

A periodic report on the activities of AIR REVIEW PUBLISHING CORPORATION, publishers of **Southern Flight** . . . **Modern Airports** . . . **Official Directories of U. S. Certificated Aircraft & Airmen** . . . **Air Market Data Service** . . . **Standard Guide to Private Planes** . . . 1901 McKinney Ave., Box 750, Dallas 1, Texas. Also Chicago, Detroit, Los Angeles, New York

AN ENTERPRISING WORKING PRESS

SOUTHERN FLIGHT strives for aviation journalism at its aggressive best, shuns complacency and self-satisfaction. Hard work for outstanding editorial content leaves us little time or space for mere handouts.

It is journalistic enterprise that makes SOUTHERN FLIGHT more readable than any aviation publication in America. Journalism trained and proven in aviation for the last fourteen years is what produced "Mercy By Air" which detailed the greatest aerial mercy operation in peacetime aviation during the Texas City disaster.

Journalistic enterprise sends a staff member on cross-country flights trip testing (not airport bouncing) leading lightplanes. It produces monthly studies in airport management which have been adapted into college curricula, and reprinted by contemporaries.

It posts the reader on up-to-the-minute aviation trends — not through news items, but through expertly conceived feature articles that interpret changing market and flying conditions months in advance. SOUTHERN FLIGHT's readers were briefed in the Spring of 1946 on conditions which were culminated with no surprise to them in the wring-out of late '46 and which now are nearing a turning point in 1947.

It all adds up to an energetic editorial service which never before was so vitally needed by a troubled industry.

Thirteenth of a series

'47 Aircraft Directory Mailed

MAILING of the national and state editions of the 1947 Official Directory of Aircraft Owners got under way May 28.

The new edition features several improvements over last year's, chief among them the listing of aircraft owners' names alphabetically by states; also the ready separation of owners of more than one plane from single plane owners.

The national edition sells for $90; state editions are priced at $25 for the first state, and $10 each additional.

New Ad Contracts

WE'VE PUT the welcome mat out for some familiar names recently among new advertising accounts. These six- and twelve-time contracts are exclusive of one-time insertions and small units.

Full pages in color were scheduled by Texaco, Pacific Airmotive, Magnolia Petroleum. Other page advertising has been placed by Aircraft Radio Corp., Harry Hammill, Bell Aircraft.

Fractional page display units were contracted by Air Accessories, Sensenich, AGA, Flying L Ranch, Jacobs Aviation, Weatherly - Campbell, Dallas Aircraft Sales, Hicks Aviation, Cobell Industries, Decker Mfg. Co., Dallas Aero Service.

New Chicago Office

SOUTHERN FLIGHT expanded its sales-service facilities in the North Central states with the opening recently of a Chicago office at 605 West Washington Blvd. (Central 6744). Thorpe Covington, assisted by Burton Johnson, will operate as far as St. Paul, Omaha, Kansas City, St. Louis, Louisville, Indianapolis.

COMPANY PRESIDENT AND AGENCY MEDIA DIRECTOR BOTH SING PRAISES OF

Southern FLIGHT
Including MODERN AIRPORTS

JOHN W. FRIEDLANDER
President
AERONCA AIRCRAFT CORP.

"WHEN you have a specific job to do, you find the proper tool to do it. We have long recognized the market which SOUTHERN FLIGHT's circulation reaches as one of the best for the sale of private aircraft. It was a natural selection to include SOUTHERN FLIGHT in our 1947 advertising schedule."

"IN ADVERTISING private aircraft, it is important to reach pilots, fixed base operators and other airport personnel in the most important areas of the country. The South, with its excellent flying weather, is one of these areas, and SOUTHERN FLIGHT gives the right coverage of the right people in this right area."

WALTER G. SMITH, V. P., in charge of Media Planning,
THE BIOW CO., INC., Advertising, New York.

AERONCA announces
NEW SUPER-CHIEF

New Speed...New Performance...YET COSTS LESS THAN ANY OTHER 85 HP. SIDE-BY-SIDE PLANE!

Again—it's AERONCA! Again—with the new Super-Chief—Aeronca shows the way in economical, top-performance, personal flying.

Here's *real* power—*85* Horsepower . . . power you *feel* the moment you get your hands on the wheel! You *go faster—climb faster—maneuver faster!* Here's *real* luxury that means comfortable, relaxed flying all the way! Here is beauty and performance that only Aeronca engineering—the world's finest—could produce.

Here—in short—is the personal plane you've always wanted. See the new Aeronca Super-Chief — fly it — at your nearest Aeronca dealer's *this weekend!* Aeronca Aircraft Corp., Middletown, Ohio.

Attention—Flying Farmers!

HERE'S YOUR NEW AERONCA FLYING FARM WAGON—Has 24 cubic feet of cargo space. Holds 220 pounds of equipment and baggage. Can be converted in 10 to 15 minutes into a standard 2-passenger Aeronca. Price: $2510.00 F.A.F.

"BETTER FLY AERONCA!"

OVER 1200 AERONCA QUALIFIED DEALERS TO SERVE YOU AT HANDY AIRPORTS ALL OVER THE U. S. A.

TO BUSINESSMEN TOO BUSY FOR DEMONSTRATION FLIGHTS

NAvion

How would you like to make a business trip by private plane to any city within a 150-mile radius of your office —FREE?

These NAvion dealers want you to try a demonstration as part of your business—and invite you to make such a flight entirely at their expense. They think an actual business trip will demonstrate better than anything else the comfort, economy and stability of this 150 mph executive transportation.

In order to save every possible minute of your time, they'll gladly pick you up at the airport nearest your home or business.

All they ask in return is: While the easy-to-fly NAvion speeds you to your destination, they'd like a few minutes to explain to you that actual cost figures have proved it can be operated for as low as one cent per passenger mile . . . that hundreds of business and professional men are daily proving its profitable performance.

If you are interested, why don't you call the dealer nearest you, or drop him a note on your business letterhead?

☆ **EL PASO: Aircraft Instrument and Radio Corporation Ed Anderson Municipal Airport.**

☆ **MERCEDES: Val-Air Lines, Inc., Central Valley Airport.**

☆ **ODESSA: Tex-Air Company, Box 686.**

☆ **SAN ANTONIO: Monroe & Witt Flying Service, Hurt Airport. Box 82-A, Route 4.**

☆ **TAFT: Worsham Aircraft Sales, Worsham Field.**

☆ **TYLER: Williams Air Activities, Pounds Field.**

Gulf Aeronautics

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MARSHALL'S FIELD

"THE DEPARTMENT STORE OF THE AIR"

Direct factory dealers for

TEXAS • NEW MEXICO • LOUISIANA

Buckner Boulevard, Route 3, Dallas

(7 miles southeast of the center of Dallas)

Hunter 8-1278 L-4111

GULF AERONAUTICS now offers this additional aviation service: Complete line of VA-approved flight courses, including Private, Commercial, Instrument, Instructor, Multi-engine. Get the full details.

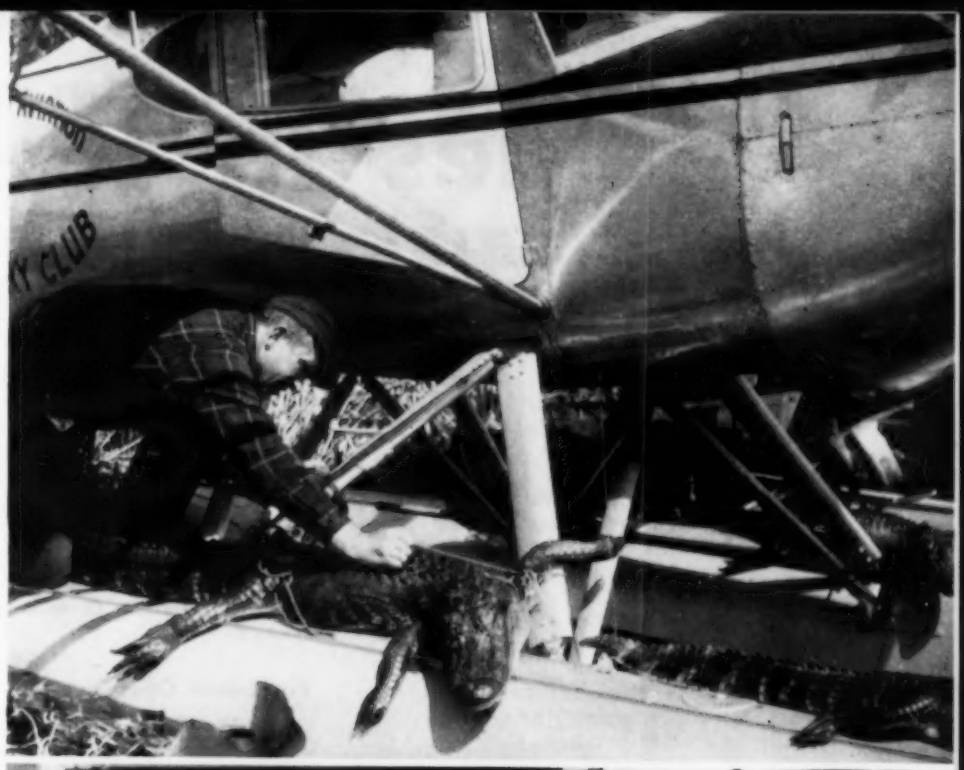
This Month's Modern Airport

Country Club Base

ON the shores of Lake Killarney adjoining Orlando, Florida, is one of the busiest air resorts in the South—Tom Turner's beautiful Orlando Aviation Club. It's a combination landplane and seaplane base, the landplane part being a Class 1 field comprising only 50 acres, with a single North-South turf strip 2,100 ft. long and 200 ft. wide. The South heading is used for take-off, the North heading for landing. Two water strips are 7,250 ft. and 5,000 ft.

Orlando Aviation Country Club operates the largest GI flight school in Central Florida. Facilities include one hangar 40 by 60 ft. and six T hangars; a club house with meals and entertainment; 80 and 91-octane fuel; major and minor A & E repairs, 15 tourist courts adjacent to the airport.

Sports in addition to flying include skiing and swimming daily as well as fishing. Two guests who rented a float plane last month returned from a nearby lake with limits of black bass, two weighing over 10 lbs. each. A bar at the Club is open to those through flying for the day. Deer, wild pig and chickens are barbecued, with special cookery including fish, turtle and alligators. Before you leave, wire Tom Turner, manager, for reservations. ★ ★ ★



Alligators (on Cessna's floats at top) are hunted as sport at Orlando. Merrymakers at the bar (center) dance inside the Club and on its terrace. The beauty below flew in by Luscombe, ready for water skiing.

—(Hans Groenhoff Photos.)

Values In Resources

Facts and figures prove Florida's investment in aviation is returning handsome dividends and employing thousands of people.

By WILLIAM C. LAZARUS
Aviation Supervisor
Florida State Improvement Commission

FLORIDA ranks as one of the leading states in aviation activity. But available figures have shown only a sketchy picture of that activity. Now, however, a more comprehensive outline of Florida aviation can be provided, as the result of a survey we have just completed for the Florida State Improvement Commission. The material we have developed can serve as a guide by which other states can gauge the values of their aviation resources.

Florida investments in aviation total $701,443,050, which last year produced a total of $211,089,450 in aviation payrolls, aviation purchases and indirect aviation revenues. There are 127,343 persons employed and supported by and engaged nonprofessionally in Florida aviation. Here are the results of our survey:

Major Aviation Activities

Eight scheduled airlines employed 10,289 people supporting 34,778 people. Annual payroll was $13,391,140 and they spent an additional $70,411,270 for supplies, giving a total spent by these companies in the state of $103,802,410. Their capital investment in equipment, land and other items in Florida was $24,396,000.

Forty non-scheduled air carriers employed 805 people supporting 2,410 people. Annual payroll was $2,700,000 and they spent approximately $6,000,000 for supplies, giving a total spent by these companies in the state of $8,700,000. Their capital investments totaled $6,550,000.

Sixty aviation supply and service organizations employed 1,098 people supporting 3,672 people. Annual payroll was $2,568,960 and they spent approximately $500,000 locally for supplies, giving a total spent by these companies in the state of $3,068,960. Their capital investments totaled $12,086,400.

Two hundred and forty-four airports (including 31 active military air establishments) employed an estimated 14,521 people, supporting 43,563 people. Annual payroll was computed at $34,850,400 and they spent an estimated $3,830,000 for local supplies, giving a total spent by these airports in the state of $38,680,400. The total capital investment in these 244 airports is $632,700,000. This latter figure can be broken down as follows:

126 publicly owned airports - - -	$220,700,000
31 military air establishments	409,000,000
87 privately owned airports - - -	3,000,000
	$632,700,000

Fixed-Base Operators

One hundred and fifty-six fixed-base flight operators (schools, dusting firms, etc.) employed 1,710 people supporting 5,079 people. Annual payroll was $4,326,380 and they spent approximately $3,000,000 for supplies giving a total spent by these companies in the state of $10,326,380. Their capital investments totaled $4,890,150. They operated a fleet of 1,272 airplanes. One hundred and twenty-four of these operators are CAA-approved aviation schools participating in the Veterans Flight Training Program. These schools averaged 31 students in training at any one time during 1946. Approximate length of courses is 16 weeks or 124 students per school per year. This totals 15,356 students per year on the veterans' program alone. Approximately 8,000 non-veterans were also trained at the same time, giving a total of 23,356 people who used the services of these schools in 1946. These schools running at full capacity can handle 12,000 student pilots at a time or 36,000 pilots could be trained per year in these facilities.

Eight governmental agencies (state and federal) employ 639 people, supporting 1920 people. Annual payroll is $1,887,600 and they spend $200,000 annually for local supplies, giving a total spent by these agencies in the state of $2,087,600. Total investment by these agencies is $5,520,500. Out of this group the State of Florida employs one person with an annual payroll of $3,000 and spends approximately $2,500 for travel and supplies.

Ten thousand active "personal" pilots (non-professional) in the state spent an estimated $200 on their personal flying including medical fees, hangar rent on planes, fuels and supplies. This group therefore spent approximately $2,000,000. There are approximately 1,000 personal airplanes in the State (out of 2,500 total) which are owned by residents of Florida, having a value of $2,500,000.

Aviation's "by-product" industries (fuel dispensing, airport concessions, etc.) employ 855 people directly chargable to the aviation activity, supporting 2,565 people. The annual payroll was estimated at $2,144,400. There is a capital investment in these of $2,800,000. Only 50 per cent of aviation's "by-product" industries is charged into the total payroll since approximately half of this is a respending of aviation payrolls from other segments. Example: Airport employes usually buy their lunches, cigarettes, etc., from airport concessionaires. Therefore, only $1,072,200 was credited in this survey.

Aviation's "indirect" revenues from 613,000 tourists who flew to Florida and 15,256 veterans in flight training, plus the savings to farmers and growers of the state from the agricultural use of the airplane, produced at least $41,341,500 which would not have been spent or retained in Florida if the airplanes had not been used.

Indirect Revenues

During the first five months of 1946, 189,362 international air travelers passed through Miami's gateway. It is conservative to speculate that this traffic represented a $30,000,000 boost to Florida business. The average international air traveler spends a minimum of $10 daily for hotel accommodations and meals, plus untold amounts for clothing, services, souvenirs, entertainment and other items, according to Wilber L. Morrison, Pan American Airways vice presirent.

Domestic airline passenger traffic to and from Florida now averages 50,000 passengers per month during the winter season. Assuming half of these are arrivals and half departures, 25,000 people per month come to Florida by airline. Considering the six-month period from November 1 to May 1, 150,000 people per season use the airlines for "vacation transportation" and by so doing save an average of two days travel time on the round trip. These two extra vacation days are spent in Florida where the average tourist now spends at least $25 per day.

Therefore, because air transportation was used instead of slower means such as rail, bus or private automobile, Florida tourist business is richer by $7,500,000 spent by these 150,000 people who have two more days of vacation.

Private Flying Offers Most

Attracted annually by the All American Air Maneuvers at Miami and other aviation events of the winter season, some 8,000 people fly or ride in personal airplanes to Florida for the

(Continued on page 56)

EVERY MAJOR AIRCRAFT ENGINE MANUFACTURER SPECIFIES

BENDIX-SCINTILLA

IGNITION EQUIPMENT

On all types of aircraft the Bendix-Scintilla* reputation for engineering excellence and manufacturing precision is reproven daily by a variety of ignition products.

The entire family of Bendix-Scintilla products—electrical connectors, aircraft coils, wiring harness, radio filters and other ignition equipment—delivers the same high degree of performance that has made Bendix-Scintilla Magnetos the standard of the industry.

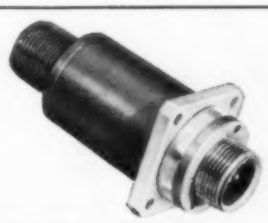
Follow the example of leading engine manufacturers and airlines—specify Bendix-Scintilla ignition equipment!

*TRADE MARK

SCINTILLA MAGNETO DIVISION of
SIDNEY, N. Y.

Bendix
AVIATION CORPORATION

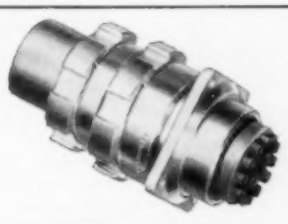
Bendix-Scintilla Radio Interference Filters are designed for insertion in aircraft ignition grounding circuits. Extremely successful in eliminating radio noise at very high frequencies.



Bendix-Scintilla builds both high tension and low tension aircraft ignition systems. The newly developed low tension systems are designed for extra efficiency, especially at high altitudes.

• • •

Bendix-Scintilla is also a leader in the field of Diesel Fuel Injection Equipment and is in wide use on railroad, marine and stationary Diesel engines.



Bendix-Scintilla Electrical Connectors are built in a wide variety of sizes and types. Precision-designed to give a pressure-tight, water-tight and radio-quiet assembly, they are performance-proved by thousands of installations.

Taking delivery in the dead of winter, The David Clark Company, Inc. of Worcester, Massachusetts, maker of "Straightaway" products for men, is proving the year 'round versatility of the Republic Seabee Amphibian.

They report . . . "easy for our people to learn to fly . . . already used to bring buyers" . . . and for quick visits to suppliers . . . "to a couple of lakes full of trout and salmon."

You, too, will be interested in this "New design for better living."

"STRAIGHTAWAY"

for Work

or Play

New Design for Better Living

ERNEST L. OLRICH, JR. . . . Sales Mgr. of The David Clark Company, Inc. Special Research and Development Div. of Munsingwear Company . . . lauds value of the De Luxe Seabee for "our quick contacts with suppliers and buyers" . . . "a natural for maintaining liaison with other divisions" . . . also stresses playtime plus . . . "only hour and a half by Seabee to favorite salmon lakes reached before only by two day combination oil train, buckboard, and canoe." . . .

"For Business . . . or Sport nothing compares with this VERSATILE amphibian"

The one personal plane which meets the dual requirements of today's hard working, sports loving executive . . . The Seabee all metal amphibian operates from field or stream, thus multiplying safety factors many fold . . . Relaxing comfort in the luxurious four place cabin with plenty of head and leg room . . . The 215 H. P. Franklin gives speed and range enough to get you through with ease and economy . . . Controllable and reversible pitch propeller, and hydraulically operated flaps and landing gear are standard . . . and assure better take-offs and landings . . . . . Price $6000 F.A.F.

FREE . . . Your copy of "Transportation Unlimited" Write Dept. G-1, . . . Republic Aviation Corporation, Farmingdale, Long Island, New York. . . .

De Luxe Seabee

A PRODUCT OF REPUBLIC AVIATION

Makers of the Mighty Thunderbolt

This story of The David Clark Company's effective use of the Seabee is being told to America at large through leading national and trade publications.

Republic's Blue Ribbon Roster of Seabee Distributors and Dealers is piling up new evidence day by day, of the versatility of this grand amphibian for business or sport.

Due to the immediate acceptance of this revolutionary plane, these dealers are adding new customers and, through sales, service and exacting maintenance, they are making new enthusiasts for an aviation-minded, progressive America.

Perhaps your territory is still open for dealership . . . . . write or wire for particulars. Dept. R-1, Republic Aviation Corporation, Farmingdale, Long Island, New York. . . . . .

De Luxe Seabee

A PRODUCT OF REPUBLIC AVIATION

Makers of the Mighty Thunderbolt

300 Attend Texas Airport Conference

Many of the 300 participants in the 4th Annual Airport Management Conference at Texas A. & M. College last month said it furnished the best discussion on airport problems they had ever attended. CAA, state and municipal officials and airport operators attended, although the number of municipal officials was disappointing.

The Conference distinguished itself by passing only one resolution—describing the role of mercy played by aviation and citing the vision and foresight of air-minded Texas City citizens responsible for the construction and maintenance of that community's small airport, which unexpectedly became the operating base for hundreds of volunteer airplanes, saving lives and alleviating suffering in the recent Texas City explosion disaster. Copies will be sent to all state and national legislators, aviation associations, U. S., state and local authorities, aviation writers and others interested in developing aviation.

Transcripts of the discussions on airport problems are available from Howard W. Barlow, Dean of Engineering, Texas A. & M. College, College Station, Texas, co-chairman of the conference, jointly sponsored by A. & M., Southern Flight and the Civil Aeronautics Administration. W. T. Brown, 4th Region CAA airport management and operations specialist, led discussions on management. Former Texas Attorney General William McCraw was principal speaker at the annual dinner, stressing the importance of civil aviation in air power.

S. E. Travis, Jr., superintendent of airports, CAA 4th Region, Fort Worth, and Pat Moore of Peoria, Ill., executive secretary of the American Association of Airport executives, are shown at the Texas Conference last month. At top is demonstration of a new powder fire extinguishing agent shown snuffing out a gasoline fire. —(SOUTHERN FLIGHT Photos).

Runway Standards Proposed for Transports

Civil Aeronautics Administrator T. P. Wright has circularized the aviation industry with a proposal to standardize runway dimensions and strengths for different types of use and thus provide aircraft designers, manufacturers and municipalities a standard by which uncertainties in runways might be avoided.

Suggested standards, circulated for comment and criticism, apply to four types of airline service and are as follows:

Feeder airline service — runways 3,500 ft. by 75-100 ft.; taxiway 40 ft. wide; landing strip 300 ft. wide; maximum pavement loading 15,000 lbs. single wheel and 20,000 lbs. dual wheel.

Local airline service — runways 4,500 ft. by 100-150 ft.; taxiway 40 ft. wide; landing strip 400 ft. wide; maximum pavement loading 30,000 lbs. single wheel, 40,000 lbs. dual wheel.

Express airline service—runways 6,000 ft. by 150-200 ft.; taxiway 75 ft. wide; landing strip 500 ft. wide; maximum pavement loading 60,000 lbs. single wheel, 80,000 lbs. dual wheel.

International airline service—runways 7,000 ft. by 150-200 ft.; taxiway, landing strip and pavement loading same as for express.

If accepted, the standards will establish specifications for airports to be built under Federal Airport Act and for any other civil airport construction involving Federal funds.

Griffin Heads National; Law Goes to N. Y.

Bennett H. Griffin, one of the country's pioneer civil aviation leaders, has succeeded Hervey F. Law as the CAA's administrator of Washington National Airport. Law resigned to become general superintendent of airports of the New York Port Authority.

Griffin's airport management experience began 25 years ago. An Army pilot overseas in World War I, he later became a sales executive of Nebraska Aircraft Corp., owned and operated a flying service in Oklahoma City, flew with Jimmy Mattern nonstop to Berlin in 1932, and joined the Bureau of Air Commerce in 1933 as an aeronautical inspector. With CAA he directed experimental work on landing aids including ILS and became chief of the inspection standards section training new inspectors and standardizing old ones in airline personnel examination procedures.

Law had been National Airport manager since September, 1943, increasing its revenues from $443,000 to about $838,000 a year. He has lectured on airport problems at American University, New York University and Brooklyn Polytechnical Institute and is an authority on modern airport management principles.

State Activities

Mississippi has 110 airports, of which 57 are all-weather fields, according to CAA compilations announced by the Mississippi Aeronautics Commission. Eight of the airports are lighted nightly, ten on request. By types there are 48 commercial airports, 36 municipal, 13 military, 6 private, 4 CAA, 2 seaplane bases and 1 "personal use." Registered aircraft in Mississippi total 721.

DALLAS AERO SERVICE's new aviation supply store on Love Field adjoins the firm's lounge for visiting pilots. Southwest distributors for Bendix, Firestone and Fuller products, the store carries complete supplies and accessories for aircraft and aviation personnel.

SUPER CHIEF

(Continued from page 14)

taxi will cost you only 75 cents to the airport.

The engine kicked over the first time we yanked the starter and a few minutes later we were climbing with the airport far below. It's wise to get plenty of altitude before leaving Hot Springs, for terrain near the airport is rough.

Rain showers plagued us most of the way back to Texas. Time and again we veered off course to skirt driving rain. Fifty miles out of Texarkana, the granddaddy of all thunderstorms confronted us. Turning South, we flew some thirty-five miles off course, staying well clear of the advance rain showers. As we skirted the squall line, lightning cracked spasmodically and brilliant vertical flashes slammed into the open countryside. Even the thin layer of clouds boiling sullenly ahead of the storm had a ghastly, blackish cast. We seneaked around the storm, like small boys tip-toeing past a sleeping bull, and White Rock airport was a welcome sight indeed.

Performance

When you fly the 85-hp. Super Chief, you'll find few design changes over the 65-hp. Chief. Biggest improvement is the extra power provided. The vertical stabilizer has a more graceful look, due to dorsal area added for more lateral stability. Other than that, and mufflers, the Super Chief is a ringer for the 65-hp. Chief.

But back to performance. Any short-field performance lacking in the 65-hp. Aeronca is more than made up in the Super Chief. It gets off in a hurry and will get upstairs with shorter forward travel than any 85-hp. model we've flown. Best rate of climb for the plane we flew was 675 fpm. During our check-out at White Rock with Pappy Reeves, Dallas Aeronca dealer, we took off behind a well-known 85-hp. model. When we had 400 feet and were ready to make a left turn, the other plane was well ahead of us but still 150 feet below our level.

Aeronca makes no dreamy-eyed claims about the Super Chief's cruise performance. You'll get 95-mph. cruise using 2,350 rpm. That's the factory's claim and the cross-country trip verified this at every altitude. On one occasion we did even better. Coming out of Hot Springs, in relatively smooth cool air, the Super Chief indicated 95 mph. at 2,000 feet. That's 100 mph. true.

What the side-by-side Aeronca lacks in speed, it makes up in stability. It stalls slightly above 40 mph. and has excellent feel during the stall. Control at slow speeds is good. Even in glides at 50 mph. with power off you're not likely to get into trouble unless you violate every law of safe flying—which indicates the Super Chief will be popular for training purposes. At the same time, short-field performance, rate-of-climb and ease of flying are obviously good selling points to the flying farmer and rancher markets.

Burning about 5.5 gallons an hour, the Super Chief has a fairly good range with its 15-gallon main tank and 8-gallon reserve. The reserve empties by gravity flow into the main tank. This means it should be used only when in level flight and that it must be cut off before landing. Otherwise, gasoline would run out through the overflow.

Mufflers are an improvement over the 65-hp. Chief and do a good job. Mufflers used as standard equipment are Hanlon-Wilson, an interesting point since Aeronca experimented with its own muffler for a year or so. The standard muffler has been service-tested for 500 hours of continuous operation. Another improvement is the Super Chief's paint job, which involves heavier coats of Titanine—and shows it.

You'll also find the McDowell mechanical starter is standard equipment. If you've hand-cranked a lot of airplanes you'll appreciate this. And you'll also know how to use it. We collected a lot of blisters and a skinned elbow in just one session—but the fault was not McDowell's. Later Bill Henricks, Aeronca representative, showed us the correct procedure. First, load the engine, either by hand or with the starter. In summer time no more than 2 or 3 turns of the prop are needed. In summer, primer should rarely be used. Then the prop should be moved to the exact horizontal position. With the throttle cranked, and the switch on left mag, the starter handle is yanked. As the engine starts, switch to both mags.

The ladies will find no step for entering the Super Chief. According to Henricks, the factory hung steps all over the new Chief, then ran surveys to see which step women employes liked best. A majority said it was much easier to back in, sit down, and then daintily pull in their legs. So all steps came off.

We liked the roominess of the Super Chief, the air foam cushions, low noise level and easy handling. It's not a plane for long cross-country's if you're in a hurry, but adding a McCauley metal prop will give it an extra 5-7 mph. of cruising speed. We also liked the easy handling characteristics and stability. It's always nice to fly a plane you know can be put down in a short field if trouble develops—particularly when you're flying up Arkansas way with tiny landing patches sparsely scattered.

All in all, the new Chief's improved performance, comfort and short field characteristics indicate a sincere effort to give the public what it wants—or at least what Aeronca believes it wants. Equally significant is the $2,665 price—the same price formerly paid for the 65-hp. Chief. ★ ★ ★

SINGLE-SEATER

(Continued from page 12)

amount for incidental maintenance, sparkplugs, a valve or two, tune-ups, etc., the operating costs would seem to be ultra small.

Mooney hesitates to talk speculatively about a sales price, because there are too many uncertainties. However, he hopes to hold the price to a point between $1,000 and $1,500. At $1,250 the purchase price would parallel that of a low-priced auto and could be financed similarly. Charged off in three years, depreciation on a basis of 500 hours per year would be 83 cents per hour.

Operating costs, according to these figures, would be 54 cents per hour for fuel and oil, 20 cents hourly for overhaul and maintenance and 83 cents hourly for depreciation, or a total, on the basis of 500 hours annually, of $1.57 per hour. And 45,000 miles costing $783 would equal about 1¾ cents per mile for depreciation, overhaul and maintenance, and fuel and oil.

But those essential costs are not all. They are, however, the costs where a light-powered, high-performing single-seater would offer its major advantages to the owner. From then on the costs become more or less standard, or applicable to all light planes. Insurance at the rate of 12 per cent annually would add 30 cents per hour and storage at the rate of $20 monthly would add 48 cents per hour, thus bringing the total to $2.35 per hour or 2 6/10 cents per mile.

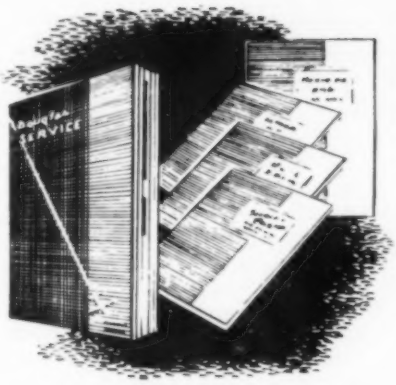
The tabulation of such costs:

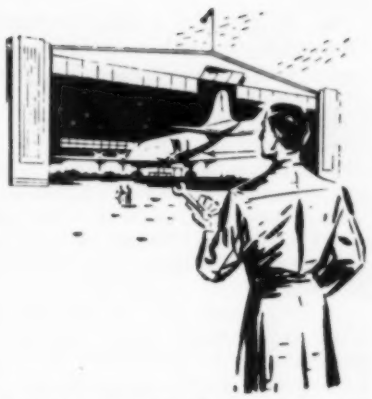
Factor	500 Hrs.	Cents Per Hr.	Cents Per Mi.
Depreciation	$ 416.67	83	.92
Overhaul and maintenance	100.00	20	.22
Fuel and oil	270.00	54	.60
Insurance	150.00	30	.33
Storage at $20	240.00	48	.53
Total	$1,176.67	$2.35	2.60c

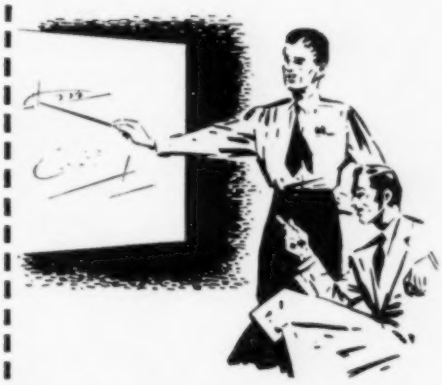
All of which would make it possible for an owner to pay for a Model M-18 and fly 40 hours a month for $94 per month. ★ ★ ★

DOUGLAS 9-POINT SERVICE PROGRAM

...cuts maintenance costs
...keeps planes flying!







SERVICE PUBLICATIONS

The Douglas Service Magazine reaches 10,000 people monthly... is packed with useful data on service methods. Other Douglas publications aid operators get better service at lower cost.

SERVICE EQUIPMENT

Hand tools, hangars, fixed docks, loading and handling equipment—these and many other types of specialized service aids help operators speed maintenance and operations.

MAINTENANCE TRAINING

Today the finest designs in the world for mobile training aids are in Douglas files. Classroom instruction and shop demonstrations are also provided for trainees at Santa Monica.

A Dependable, World-Wide Service Program to Aid Operators of Douglas Transports

● Are your maintenance costs in line? Is your service work done as quickly and as expertly as possible? Operators of Douglas equipment can say "Yes" to these questions if they are taking full advantage of the Douglas 9-point Service Program.

The entire resources of this company through Douglas Service are aimed at one objective: to make Douglas transports the most "usable" airplanes in the world. Experienced men are trained especially for Douglas service work. They alone have access to the latest facts so vital for fast, expert repairs at reasonable cost. Special tools, methods, and facilities... factory-made parts—all speed work under the Douglas Program.

Your profits depend on the number of hours your planes are *in the air*. Keep 'em flying and save money by using this 9-point Service Program for Douglas transports.

DOUGLAS AIRCRAFT COMPANY, INC., SANTA MONICA, CALIFORNIA

RELY ON THIS DOUGLAS 9-POINT PROGRAM

1. FIELD SERVICE REPRESENTATIVES
2. PLANT SERVICE ENGINEERS
3. ENGINEERING-SERVICE LIAISON
4. SERVICE PUBLICATIONS
5. SERVICE EQUIPMENT
6. MAINTENANCE TRAINING
7. SERVICE ANALYSIS
8. SERVICEABILITY
9. SERVICE CENTER SYSTEM

If you are not taking full advantage of the services offered by Douglas, write for a free copy of our booklet "Service Program for Douglas Transports."

MORE PEOPLE FLY
MORE PLACES BY DOUGLAS

A Real S

Activities in only three small sections of PAC's new Burbank plant illustrate its high-efficiency tooling and handling methods. Engine parts are all kept together, in wheeled bins (top) as engines undergo overhaul. Final assembly inspection of airline engines is seen in the center photo. A corner of the propeller shop is in the bottom photo.
—(Pacific Airmotive Photos.)

NOTHING has deterred the development of aviation in this country more than lack of service. Good, reasonably-priced "super service station" service is not available to the private plane owner on anything like a nationwide basis. Owners of new, well-built and reliable airplanes would be encouraged to make more cross-country flights if they had assurance of a spare parts supply and adequate maintenance and repair facilities.

We have been a flier for almost twenty years and have been grounded many, many times for lack of the simplest parts and services—lack of a spark plug or a fuel pump part. We have landed at airports after a long day of flying to find the operator gone and the gas pump locked. There hasn't been a month in all that time during which we haven't heard a new story of bad or exorbitant service at some airport.

A long time ago, we decided that some one company would have to take the lead in providing that big missing link—a real service organization. That company would need several things:

1. It must have an extensive and representative line of aircraft goods and supplies, all of which must be available to the fixed-base operator without delay.
2. The organization must have long experience in aviation. They must have a long and time-tried supply of aircraft "know-how".
3. They must operate several large service bases for the convenience of the small operator who is not sufficiently financed to install even a small edition of such a facility. These bases must be located in localities where they can be of service to all operators of aircraft, both large and small. Without industry-wide backing, it is impossible to support such a facility.
4. The company must have available a large, a very large, amount of capital. If it is going to become a vast warehouse for hundreds of airport operators, its dollar inventory figure would be very high.
5. Due to transportation difficulties the parent company must own, or establish, a chain of supply depots and sub-depots throughout the territory it wishes to serve.

Outline for Nationwide Service

In 1941 we at Pacific Airmotive decided that we had, or could obtain, those qualifications and were ready to take the gamble. And a gamble it most certainly was and is. The war delayed our program. It wasn't until the Spring of 1946 that we were ready to start. By Fall of that year we were under way. We had obtained the five prerequisites:

1. Through the years we had constantly added to our lines of merchandise. They now totaled over three hundred and included more than five hundred thousand items.
2. We had twenty years of experience. We certainly did not and do not know everything about this business. However, through countless "guinea pigs"—nothing more than trial and error—we had gathered information of much value to the industry.
3. We had plans for the construction, at Burbank, California, of the largest aircraft repair, modification and overhaul base ever built with private funds. We were working out plans for the establishment of our Atlantic Division at Linden, New Jersey (Linden still isn't "shaken-down", but it is coming along and being very well received). We were soon to move our Kansas City base from a downtown warehouse to a big and modern facility on Fairfax Air Terminal.
4. We were able to convince the Union Oil Company that we were worthy of financial support, which they gave us. The Bank of America loaned us $6,000,000 for our expansion program—the expansion of facilities and the expansion of inventories.
5. We opened a new branch in Phoenix, bringing the number of our outlets to ten, which are located from Anchorage, Alaska, to Mexico and from Burbank, California, to the Atlantic.

We had announced the PAC Authorized Dealer Program. We tried to design it to give the fixed-base operator the most revenue for the fewest dollars invested. At the same time the private and executive flier would get a break in better and faster service and maintenance. The operator would be able to get goods and services far beyond anything he could expect in the past. We began to franchise dealers. The requirements were and still are quite simple. He must have a good airport location in a trade territory that would support him. He must have adequate store facilities to display aviation merchandise. We are willing to go along with him on a very liberal credit basis but he must, and this is a very positive must, have an impeccable business and personal reputation in his community.

Service Organization

By EARL HERRING
President of Pacific Airmotive Corporation

At a time when many are selling aviation short and crying the blues, it was inspiring for the editors to look through Pacific Airmotive's efficient new plant in Burbank last month. Here, in the largest aviation maintenance and overhaul facility ever built with private funds, is a model facility incorporating most of the advanced ideas maintenance men have long dreamed of. We asked Earl Herring to outline in the accompanying article his concept of modern requirements for aviation service.

The number of dollars in his bank account isn't important—his belief in aviation and the respect of his community are vital.

We now have one hundred and thirty dealers. Most of them are as yet on the West Coast and in the Kansas City area. The merchandising department of the Atlantic Division is now being organized which means that we should begin granting franchises in the East during the Fall.

Correcting Mistakes

This sounds like a "sweetness and light" story. It hasn't been and it isn't. In the first place we made mistakes. Our suppliers were not in full production until very recently—in some cases they are not yet. Hence, we were not able to deliver sufficient quantities of fabric and dope and tools and copper tubing and hundreds of other things to our dealers. Back orders are always a problem and we have had lots of them. We still have some of these problems, but the situation is steadily improving.

We made some bad appointments. It has taken months to rectify some of those errors. Recently we have added some new dealers of whom we are very proud. From all indications it looks as though this Summer and Fall might improve for private flying. For almost the first time, we have a right to be optimistic about the whole dealer program.

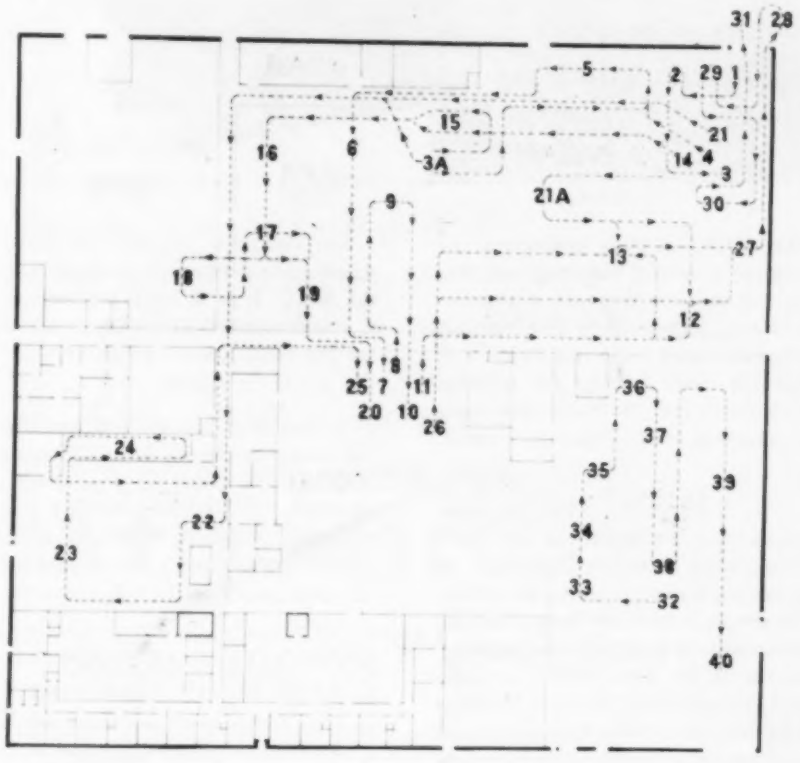
We are asked—often by young men just out of the service — how they can start a fixed-base operation with very little capital. Our answer is to suggest four slow and careful steps. We haven't found any quick road to riches in the aviation business.

First, the newly established airport operator or merchant on the airport should do installations of exchange engines and components. He should push sales of that equipment and those parts which can be installed with hand tools. Most important he must sell aviation merchandise—flying jackets, sun glasses, instruments, textbooks are but a few of the items his customers need and will buy.

His second step should be gradual increase of inventory. His shelves are a good bank for him, if he buys carefully. He will find that much of his aviation merchandise is in demand by non-flyers. Motorcyclists wear goggles and horsemen wear leather jackets.

After he has established a stock and built up his physical facilities comes the third move. He should be ready for the installation of some shop equipment. Here he must walk with caution. A good fabric and sheet metal department he needs — a propeller governor test bench costing $3,500 would be a white elephant. He may be able to make a small overhaul shop pay. We believe there is an easier, more practical and profitable way. We think that production line methods of overhaul, modification and repair will soon convince the operator of a small shop that his time and facilities should be freed so that he can become a true service operator sorely needed by the private flier.

The fourth move comes about when the operator's volume is such that he is ready to become an area distributor of parts and supplies. A natural question at this point: What happens to Pacific Airmotive? The answer is that



Flow chart shows Pacific Airmotive's engine overhaul line, the numbers tracing an engine and propeller through the modern plant at Burbank: Receiving and shipping (1), steam cleaning booth (2), disassembly (3), small engines (3A), cylinders removed (4), cleaned, sandblast, seedblast and metalizing (5), visual inspection (6), production control (7), rework, repair (8), hone, grinding (9), production control (10), cylinders to engine assembly (11), large engine build-up (12), small engine build-up (13), parts removed (14), parts cleaned (15), Magnaflux, Zyglo (16), general inspection (17), modification (18), painting (19), parts to production control (20), accessories removed (21), ignition harness overhaul (21A), production control (22), overhaul (23), carburetor and accessory test (24), production control (25), parts and accessories build-up (26), engine pre-oil for run check (27), to test cell and return (28), solvent spray booth (29), pre-shipping check and service (30), shipping (31), propeller disassembly, parts cleaning (32), Magnaflux (33), hub, dome, valve, shank overhaul (34), inspection (35), blade balancing, sanding, polishing (36), blade paint booth (37), boot repair (38), assembly, balancing, feathering test (39), propeller receiving, shipping (40).

The Practical Approach to . . .

VHF

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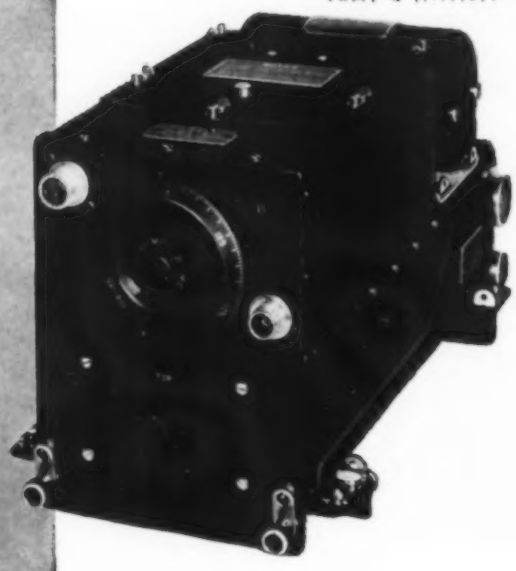
R-13

Tunable

VHF RECEIVER

ALLOWS THE PILOT TO SELECT ANY OF THE PRESENT OR PROPOSED VHF COMMUNICATION AND NAVIGATION FREQUENCIES



The A.R.C. R-13 is engineered to provide a tuning accuracy and frequency stability unusual in tunable receivers. Its selectivity and freedom from spurious responses makes it a suitable basic receiver for modern airborne VHF Multi-channel communication and navigation systems.

• • •

The R-13 alone provides communication reception on all VHF frequencies currently assigned or proposed for aviation use. By adding the simple F-10 Filter-Amplifier unit it can also be used for navigation by means of the new VHF Localizers and Visual-Aural Ranges. Further addition of a B-10 Converter unit and necessary instrumentation provides complete VHF Omni-Directional Range navigation facilities. There need be no worry that the receiver will become obsolete through limitation on the number of channels that can be selected.

For complete 2-way VHF communication between air and ground, the A.R.C. Type 18 VHF Transmitter is recommended as an ideal, lightweight companion equipment.

• • •

To insure immediate and continuing utility, make the A.R.C. Tunable Receiver the heart of your multi-channel VHF communication and navigation system, and add other A.R.C.-engineered units as needed to meet your specific requirements.

GOOD DESIGN TAKES TIME

Over four years of specialized engineering development have led to the current production of the tunable VHF Receiver which is the heart of the A.R.C. multi-channel VHF systems. All A.R.C. units are built to meet the rigid requirements of the CAA for Approved Type Certification.

The R-13 can be used in existing SCR-274 or AN/ARC-5 racks.

A·R·C

Aircraft Radio Corporation

ARC

DEPENDABLE ELECTRONIC EQUIPMENT SINCE 1928

Boonton, N. J.

when a sufficient number of operators are each moving a large volume, their combined output makes PAC an extremely large purchaser and hence a naturally chosen jobber of aeronautical supplies and services. At this time PAC will turn the retail business over to its dealers.

Confidence in Future

This four-step program isn't any bonanza, but it is perfectly feasible and practical. We sincerely believe that there are fine and secure futures for smart merchants in aviation.

When we acquired these great new overhaul shops at Linden and Burbank, many people began to believe that our primary interest was the big airline and the large commercial operator. A friend recently wrote me, "My impression is that your major program is devoted to the larger operators and aircraft." His impression is wrong and we want to correct it. Our business was started for fixed-base operators and today we have no more important customer. We were pleased to hear our customer service manager say only a few days ago that "the man who comes here in a Piper Cub is entitled to and will get the same service as the vice president of a great airline." Visitors to our plant see little Continental engine parts on the same line with the huge crankshafts from R2800's.

We think our new engine and engine accessory exchange program will be a great success, largely due to efficiency and economies effected by modern assembly-line overhaul.

Our modern sales and service facilities came into being through the combined support of the private and executive flier, the fixed-base operator and the scheduled and non-scheduled airlines, both foreign and domestic. Through this, and only through this combined support, can each segment and hence the entire industry be benefited.

We have a basic belief in the future of aviation in this country. We think the industry will prosper on all levels. That's why we are gambling several million dollars on aviation and, more important, on the people in aviation.

★ ★ ★

Two Oklahoma City operators have circularized a large area with interesting mailing pieces. Smyer Aircraft Sales and Service at Municipal Airport, Ponca City, mailed an attractive piece saying, "While in Oklahoma City we extend to you a cordial invitation to visit our aircraft supply store located on the Downtown Airpark," illustrated by a map of Oke City locating the downtown field. Recent visitors to Wiley Post Airport in Oklahoma City have received cards from Fred Bartholomew Aviation Sales expressing thanks for the business and announcing expansion of facilities with replacement parts for all popular and surplus aircraft and engines.

Thousands of aircraft and engine parts

. . . a million dollars worth . . .

YOU NAME THE PRICE!

I have 7,600 surplus military aircraft of all types, which I am tearing down in order to assemble the largest stockpile of aircraft and engine parts in the country. But I don't aim to keep them. That's why I am tagging them with prices so low you just can't afford to pass them up.

They're going fast — so wire or phone me right away; or better yet, come yourself.

HARRY A. HAMMILL

SHERMAN ENGINE & MACHINE COMPANY
Clinton, Oklahoma

actuators aircraft flooring aircraft lights auxiliary power plants
cabin heaters communication systems oxygen demand equipment
carburetors clevis pins control wheels miscellaneous hardware
compressors control cable landing gear assemblies
navigation equipment couplings bearings ignition shielding
supercharger parts radios strainers
switches wheels
bearings clocks fuel lines seats
bushings flares tires and tubes
exhaust systems remote controls
shock struts valves storage
fuel pumps fuel batteries safety
tanks solenoids belts transformers
generators hose radio parts
clamps starters spark plugs
instruments oil magnetos shock
coolers landing mounts sound-
lights fittings proofing wheel
radio compasses brakes filters
hydraulic accessories crankshafts windshield wipers wire & cable
ignition accessories pulleys engine mounts gauges
de-icers wing fittings engines (all sizes & h.p.) crankcases
electrical equipment dynamotors electronic equipment insulation
fasteners fire extinguishers flexible shafting propellers

3,000th Stinson Goes to Laphams for Flying L Operation

The 3,000th Stinson Voyager delivered since V-J Day was handed over to Col. and Mrs. Jack Lapham at their Flying L Ranch, Bandera, Texas, on June 29 by Les Bowman, president of Aircraft Sales Co., of Fort Worth, Stinson distributor who made the sale, and his San Antonio dealer, Bill Forney, and William H. Klenke, Jr., Stinson sales manager, who flew the airplane down from Detroit. Numerous Stinsons were at the Flying L during the presentation, among them being one owned and flown by Lynn Ormsby, famous early-day auto race driver and now Chevrolet distributor in San Antonio. Ormsby learned to fly recently and is past the 50-year mark. Also present for the ceremony was a representative of SOUTHERN FLIGHT and George May, Stinson public relations manager. Bowman's Aircraft Sales Co., last year led the nation in lightplane unit deliveries and Stinson last month led all lightplane manufacturers in unit deliveries.

Col. Lapham, whose Flying L, 32 miles west of San Antonio, is gaining fame as America's leading air resort, has been a Stinson owner for many years.

With AIRWAY MANUAL in your cockpit you pull into *any* airport with complete mastery of all facts essential to safe, comfortable landing. Landing procedures . . . Initial approach altitude . . . Range and communications frequencies . . . Graphic let-down and pull up charts . . . Lights . . . Runway lengths and numbers . . . Data on obstructions near radio station and airfield.

The 64,000 miles of U. S. and Canadian airways also *fully charted:* Plain Views, Terrain Profiles, Mileage Charts, Airway Traffic Patterns.

AIRWAY MANUAL is *built by pilots for pilots.* Now standard equipment with over 40 leading airlines.

Service available for any section of United States, Canada, Alaska and Aleutians.

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Address _____

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INCLUDES ILS AND GCA CHARTS

4-Place BT Approved

Four-place BT-13 conversion has been announced by Les Farrar Aircraft Sales, San Bernardino, Calif., Airport, which is marketing a CAA-approved conversion kit for $275. The kit, complete with parts, blue prints and instructions, provides for a single seat and a double seat in the rear cockpit. Conversions are available at San Bernardino Airport for $395, which includes licensing of the BT as a 4-place airplane.

WHAT'S NEW

A new 1,650-hp., two-row, 14-cylinder radial engine, Model R-2180, has been developed by Pratt & Whitney for deliveries beginning early in 1949. It was designed for nearly a score of twin-engine transports, here and abroad, carrying about 30 persons at speeds up to 250 mph. Already successful in a 900-hr. test-stand run, it is offered in single-speed supercharger and two-speed supercharger models. The single-speed model is rated for 1,650 hp. at 2,800 crankshaft rpms. for take-off, 1,300-hp. normal rated power at 2,600 rpm. to 8,000 ft., and 1,400 hp. at 2,600 rpm. up to 6,000 ft. for maximum continuous power. Weight is 1,900 lbs., diameter 50.1 in., length 75.2 in., cylinder bore 5.75 in. and stroke 6 in.

Thin, rubber-like summer film brushed on to protect airplane deicers has been announced by B. F. Goodrich, which says it makes unnecessary removal of the deicers during the summer months. With the film, they can still be operated if unseasonal icing is encountered but it is stripped off for winter operation.

A five-bladed propeller developed by NACA, with an exhaust muffler, reduced a Stinson L-5's "noise pressure" 90 per cent in a demonstration at Langley Field, Va. Gears reduced its speed to about 1,000 rpm.

Newest Lear radio, the Aircrafter, is a transmitter-receiver combination available for either 12 or 24 volts, with the transmittter operating on six very high frequencies with power of about two watts on the antenna. The receiver will cover the beacon and standard broadcast bands with loop operation available on both bands, with simultaneous range filter, instrument light and dimming control. The unit weighs less than 15 lbs.

Flottorp Manufacturing Co., Grand Rapids, is in production on an **all-wood propeller of birch bondwood for Cessna 120 and 140, Luscombe 65 and 85 Stinson Voyagers.** The new Stratoprop resists moisture absorption, stone bruises and cuts and maintains its natural glossy birch finish. Flottorp recently added controllable propeller blades for engines of 65 to 250 hp. and

"We've got flying fish in New Hampshire"

Says Ralph G. Carpenter, 2nd
New Hampshire Fish & Game Director

Both time and fish are saved by use of an Aeronca Chief on Edo floats to re-stock New Hampshire lakes.

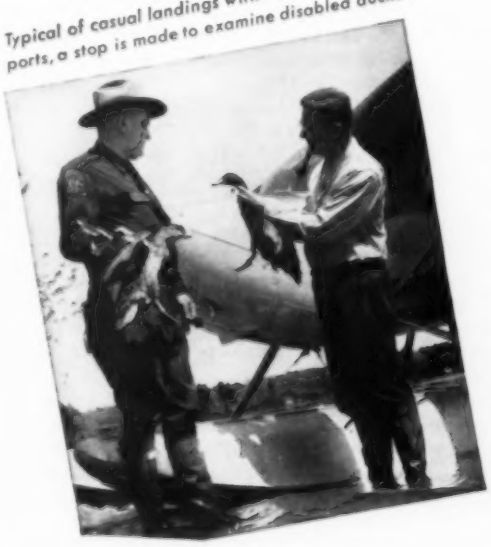
With a floatplane, Director Carpenter finds it easy to visit many lakes, such as this, in one day.

"SURE, the fish fly in New Hampshire, for we use a floatplane to stock fingerlings in even the most remote lakes. And these 'ready-made' airports make it easy for me to cover the entire state on fish and game work. If you fly floats, you'll find it easy, too, to get to the best hunting and fishing grounds."

That's mighty good advice, for any sportsman. Fly floats and you'll get in more days of sport per year, without taking any more time off from work than usual. You can make week-end trips to spots that once required a week to reach. Best of all, floatplanes take you quickly to the isolated lakes and rivers where visitors are few and sport's the finest.

Edo floats are now available for all leading types of personal planes. They're quickly installed and simple to fly. Deliveries are immediate either for factory-new planes or conversion of your present plane. If you haven't flown floats yet, drop by your nearest seaplane base and ask for a demonstration. Just look for this sign:

Typical of casual landings with 'ready-made' airports, a stop is made to examine disabled ducks.



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is now producing the greatest number and size range of propellers in its history. The Flottorp line of fixed-pitch props includes over 150 sizes and types.

Metering of fuel in response to variation in engine rpm. intake manifold pressure and exhaust back pressure rather than by variations in mass air flow through a conventional carburetor's fixed venturi is achieved by a new Stromberg "speed-density" carburetion system, described as an entirely new approach to aircraft engine fuel feed. Principal elements consist of a vane-type, engine-driven fuel pump, centrifugal pressure regulator with a temperature unit and pressure-responsive bellows assembly, accelerating pump, water regulator and fuel discharge nozzle assembly. The system can be used on reciprocating engines ranging from 60-hp. to the largest built, according to Bendix Products Division of Bendix Aviation Corp.

Designed to extend periods between overhauls and reduce engine replacement parts, **a new additive-type aircraft engine lubricating oil,** "AeroShell Oil D," has been developed by Shell Oil for commercial and private planes.

"Liquid envelope" peelable plastic film has been developed by Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J., for coating

Using an airplane in business is old stuff to R. G. LeTourneau, inventor of the Tournalayer and leading manufacturer of earth-moving equipment. LeTourneau, shown here with his twin-engine Lockheed, has flown an average of 250,000 miles a year to preach the Gospel and travel between his plants.

Flying Business Man

A PIONEER in missionary flying is R. G. LeTourneau, manufacturer of earth-moving equipment and inventor of the Tournalayer, giant house-building machine. LeTourneau, the man who made God a partner in his business and who tithes 90 per cent of his earnings to the church, flies on the average of 100 hours a month. Each week-end he delivers from three to seven messages, "bearing witness for the Lord," in all parts of the United States and Canada, flying to these speaking engagements in his own Lodestar and Lockheed 12 planes. During the past nine years, he has traveled an average of 250,000 miles a year to preach the Gospel and travel between his plants—a total of more than 2,000,000 miles, or the equivalent of 80 times around the world.

Hazards of flying are no concern for LeTourneau. He says he will die when the Lord gets good and ready to receive him, and not before. He feels he has reached and talked to more people than he otherwise could have done in two lifetimes. In his opinion, flying has put him well ahead of the game.

LeTourneau purchased his first airplane in 1937, after surviving an auto crash in which five people were killed. His conclusion was that air transportation was not only faster, but also a good deal safer.

There are a number of interesting stories concerning this air-minded manufacturer. His pilots say he can tell ground speed within 5 mph. without the aid or use of a map. He has flown over the United States so many times that, by merely looking out the window, he can accurately determine what state, or even what section of the state, his plane is flying over. LeTourneau can do this even though he has been asleep or unaware of the ground for several hours, they say.

Near his Toccoa, Georgia, plant, LeTourneau has established a Missionary Flying School. Here foreign missionaries and missionary students are offered a practical course in flight training. Through this medium in aviation development, missionaries of the Gospel may carry their messages to sections previously inaccessible because of lack of roads.

spray booths. When the booth is ready for cleaning, the coating is peeled off in large sheets, leaving a clean booth without scraping or washing.

A superfine Fiberglas material is available as a **filler for aircraft seat and seat-back cushions**, offering as much weight saving as 2 lbs. per seat, according to Owens-Corning Fiberglas Corp., Toledo, Ohio.

Stephen W. Tyler has been promoted to manager of wholesale sales by Southern Airways, Birmingham, a position vacated by the resignation of T. D. Eve, who has entered the security business. Tyler has served as assistant sales manager for the last year and a half.

A new Bendix-Scintilla "Bus-K-Nect" has been designed to save time in the removal and replacement of batteries requiring frequent change. Cable terminals fit securely in spring contacts.

DEALER NEWS

There is now more than one fixed-base operator for every 10 registered aircraft, according to Air Market Data Service, which has surveyed 8,712 operators as against 80,348 aircraft registered by CAA as of Jan. 1, 1947. Texas leads with 970 operators, California has 797. The AMDS survey shows fixed-base operators by states as follows:

Alabama 114, Arizona 137, Arkansas 137, California 797, Colorado 152, Connecticut 80, Delaware 19, District of Columbia 15, Florida 277, Georgia 170, Idaho 125, Illinois 314, Indiana 286, Iowa 200, Kansas 246, Kentucky 94, Louisiana 130, Maine 53, Maryland 79, Massachusetts 141, Michigan 402, Minnesota 198, Mississippi 91, Missouri 186, Montana 109, Nebraska 131, Nevada 36, New Hampshire 50, New Jersey 161, New Mexico 87, New York 397, North Carolina 153, North Dakota 65, Ohio 287, Oklahoma 295, Oregon 131, Pennsylvania 382, Rhode Island 19, South Carolina 78, South Dakota 57, Tennessee 127, Texas 970, Utah 53, Vermont 34, Virginia 159, Washington 163, West Virginia 87, Wisconsin 164 and Wyoming 74.

A business management office to aid Stinson dealers in aircraft sales and service merchandising has been established by William H. Klenke, Jr., general sales manager. He appointed Walter A. Simon, former Detroit zone business manager for Chevrolet Motor Co., as Stinson business manager to serve as a consultant and analyst for Stinson distributors and dealers.

Air Accessories, Inc., of Fort Worth has taken over the surplus property division and personnel of the Briggs-Weaver Machinery Company at Grand Prairie, Texas, with W. W. Tomlinson as manager.

A "one-stop" source for all your aircraft needs. Hardware, electrical supplies, rubber products, furnishings, pilot's accessories, chemicals and other allied products.

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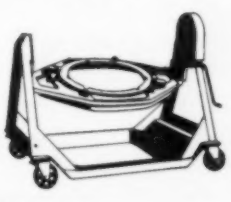

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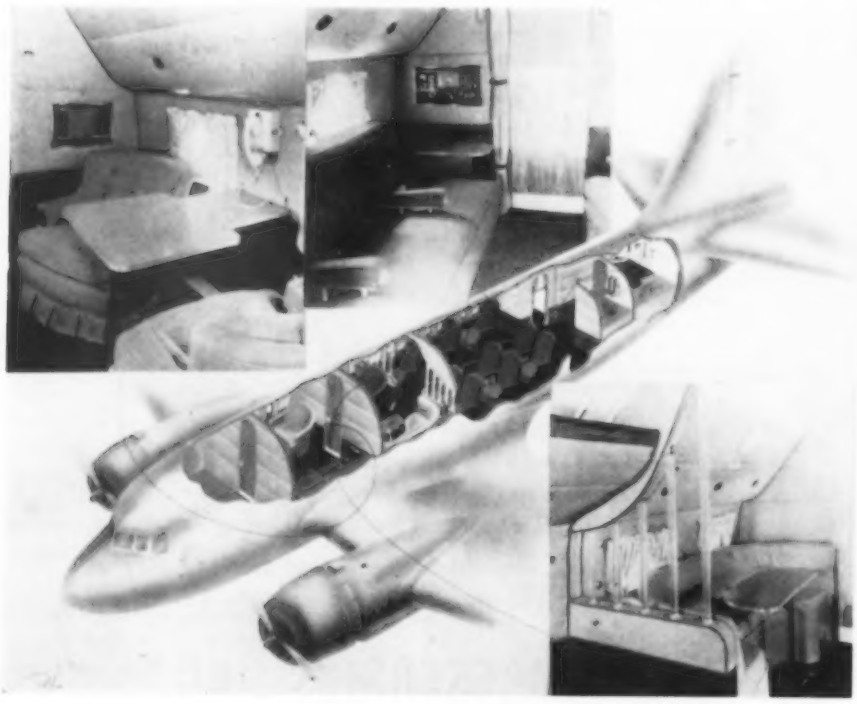
Presidential luxury in the air attained a new standard last month when Texas Engineering & Manufacturing Co., of Dallas delivered a converted C-47 to President Gabriel Videla of Chile. Believed to be the most luxurious twin-engine airplane in the Western Hemisphere, the big Douglas (below) has three compartments. Forward is El Presidente's private lounge with overstuffed swivel chairs, luxurious folding beds for four and a powerful radio receiver independent of the airplane's sets. Over the center-section is a leather-and-plastic bar, writing compartment and reception lounge, also with swivel chairs. Back of this is a 9-chair passenger compartment, and in the rear are a fancy powder room and toilet, stoves, food storage and buffet. Indirect lighting, fans, leather and mahogany feature the interior. Engines are 1,250-hp. each. E. E. Tixier, U. S. representative of Chilean National Airlines, was agent for the president and praised Temco for its design and conversion. Insurance on the presidential airliner is carried by Cottingham-Rucker & Barham of Dallas, who are also counselors on foreign aircraft sales and financing.



Temco's luxurious conversion for the President of Chile.

Chattanooga Swap Day

Chattanooga's Fifth Annual National Airplane Trading Day on July 19 and the All-Dixie Air Show on July 20 will attract airmen from many Southern states with airplanes for sale or for swap. Zack Moseley, creator of "Smilin' Jack" and well known pilot, will be master of ceremonies at an aviation ball atop Lookout Mountain, with the feature being a "parade of glamour girls" representing aviation clubs. The events are sponsored by the Chattanooga Fliers Club at Lovell Field.

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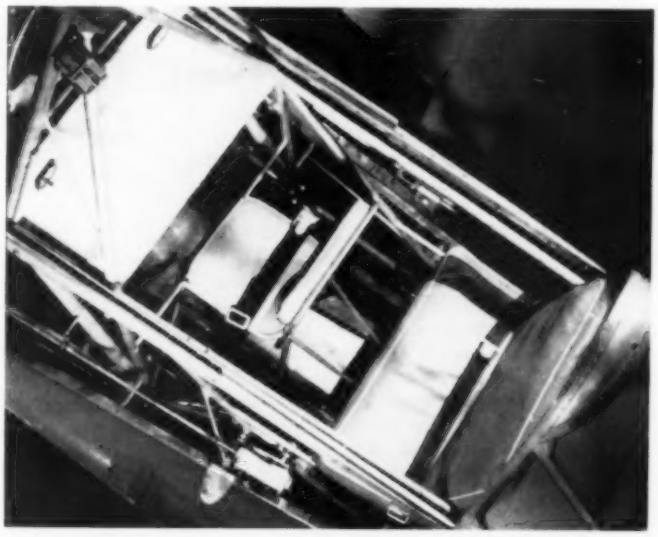

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Temco Returns Swift to Market; Owners Assured of Parts, Service

Immediate sale of 220 125-hp. Swifts, at $3,750 for the deluxe, fully-equipped model and $3,250 for the standard, and plans for full-scale parts and maintenance service for all Swift owners were announced late in June by Texas Engineering & Manufacturing Co., Inc., of Dallas, after purchase of properties of the defunct Globe Aircraft Corp., except heavy machinery and real estate, for $328,000.

"We have assemblies and components for about 500 additional Swifts as soon as the market justifies their assembly," said Robert McCulloch, president, and H. L. (Bert) Howard, executive vice president. "In addition, we have a very large inventory, originally valued at two million dollars, of parts acquired with the Globe properties. New production from that inventory awaits only the market's justification."

Temco had manufactured 350 Swift 125's for Globe as a start on an original contract for 1,500 of the two-place airplanes before Globe went into bankruptcy last fall. McCulloch said his tooling and assembly line for the Swift exists today just as it stood when production was halted. Center sections are on the assembly line, with aisles still containing nose and tail sections, wings and accessories. Full patents and manufacturing rights were acquired in the transaction.

A dealer organization is being formed by Temco and a sales campaign will be aimed at assuring existing owners of an adequate and continuing source of parts and service with prospects of renewed production as soon as demand warrants. The Swift, with Aeromatic propeller, cruises 140 mph., and has had an enthusiastic reception by business and sportsmen pilots the world over.

Temco operates over 500,000 sq. ft. of space in the government-owned plant near Dallas formerly operated by North American Aviation, Inc., has turned out hundreds of transport conversions, being licensed by Douglas for this work. Current work includes complete overhaul and refinishing of over 100 aircraft, mostly B-25's, for the Army and many transports for international and domestic airlines. In addition, the firm is a large sub-contractor to Fairchild for C-82 Packet assemblies, to Consolidated Vultee for B-36 items, and is engaged in a wide range of industrial metal production and engineering including vending machines. Employment is near the 2,000 mark and monthly billings approximate $500,000.

The Swift 125's offered at $3,750 formerly were priced at $5,400 by Globe and include Aeromatic propeller and two-way radio. McCulloch, who attained high efficiency in P-51 and AT-6 production as division manager for North American Aviation, is confident his plant can produce the Swift more economically than was done by Globe. If production is justified by demand, he can transfer workmen from other projects to turn out the Swift and Swift production can be continued, idled or accelerated as the demand dictates with other projects assuring continued operation of the plant without depending on the 2-place airplane for revenue.

"Our engineers studied the Swift a year ago when we were producing them for Globe and we believe it is the finest two-place airplane available," McCulloch said. "We're also confident of the future of aviation."

National Clinic at Springfield Nov. 19-22

With the Illinois Department of Aeronautics as host, the 5th Annual National Aviation Clinic will be held in the state capitol at Springfield, Ill., Nov. 19-22, according to Arthur I. Boreman of Des Moines, president of the National Aeronautic Association.

Send for New Folder . . . **Words alone cannot do justice to this vacation haven, but the 20-odd photographs in our new folder will help to convince you that "Life is Swell at The Flying L". The folder is completely informative and devoted in words and pictures to what you will want to know about THE FLYING L: Horseback Riding . . Swimming . . Fishing . . Hunting . . Flying . . Hiking . . Dancing . . Rodeos . . Food . . Accommodations . . Rates . . How to Get Here. ¶ What do you prefer — the communal life of a typical ranch house, or the seclusion of an individual guest cottage? You have your choice . . just as you choose your own pace and pastime at THE FLYING L. Bandera Airpark, THE FLYING L's own modern airport, makes this 550-acre dude-and-frontier ranch, first of its kind in an aviation-conscious world, at the most just a few hours away from virtually anywhere in America. Runways are 2700 ft. and 2500 ft. . . gas, oil, storage, repairs, flight instruction available.**

If you fly, you owe it to yourself and your family to send for our new folder, just off the press.

Lightplane Research, Single Physical for Private Pilots Urged

The Civil Aeronautics Administration's Non-scheduled Flying Advisory Committee last month, meeting in Washington, approved anew the CAA's proposal for Federal development work in personal airplane design for greater flying utility not now being considered by industry or other agencies and recommended private pilots should have one physical exam when they obtain student permits and none thereafter.

William A. Mara of Detroit was elected chairman of the committee, which meets periodically in Washington to advise CAA Administrator T. P. Wright and his staff on the needs of non-scheduled aviation and private flying.

In addition to proposing the single physical exam for private pilots at the time they obtain student permits, the group urged that commerical pilots, who face written exams which often require six hours to complete, should be allowed to divide the exam into two sessions.

It recommended the CAA provide another category under CAR Part 42 for single-engine planes of 5-place or less which could be used only for "taxi" purposes, and agreed private pilots should be allowed to ferry planes provided their reward consisted only of expenses or transportation.

CAA NON-SCHEDULED FLYING ADVISORY COMMITTEE, with many new members, met last month in Washington to discuss current problems with Administrator T. P. Wright. Left to right are George E. Haddaway, Southern Flight; B. A. Gillies, Slick Airways; Joe Geuting, Jr., substitute for John Friendlander, Aeronca and Personal Aircraft Council; Don Flower, Cessna; Dick Depew, pioneer airman; William Anderson, Pennsylvania state aviation director; Lloyd Child, CAA; Wright; William A. Mara, Bendix, new chairman of committee; Fred Weick, Erco; Ed Williamson, Tacoma, Wash.; Harry Playford, St. Petersburg, Fla.; Oliver L. Parks, St. Louis; Leslie Marsden, Buffalo, N. Y. In background, left to right, are Al Koch, CAA; Spike Alberry, CAB, and George Burgess, CAA. —(CAA Photo.)

It commended CAA on its stand on runway requirements, for the cross-wind landing gear program, for the efforts of CAA private flying specialists in the field, for ruling against exclusive fuel contracts on airports built with U. S. funds and its meteorology and air navigation modifications in private pilot requirements, although it urged an intensive program of education in those subjects.

Prosecution of the CAA's work in building some 800 small airports was urged and Congress was asked to make available full funds for adequate airport construction during fiscal 1948-1949.

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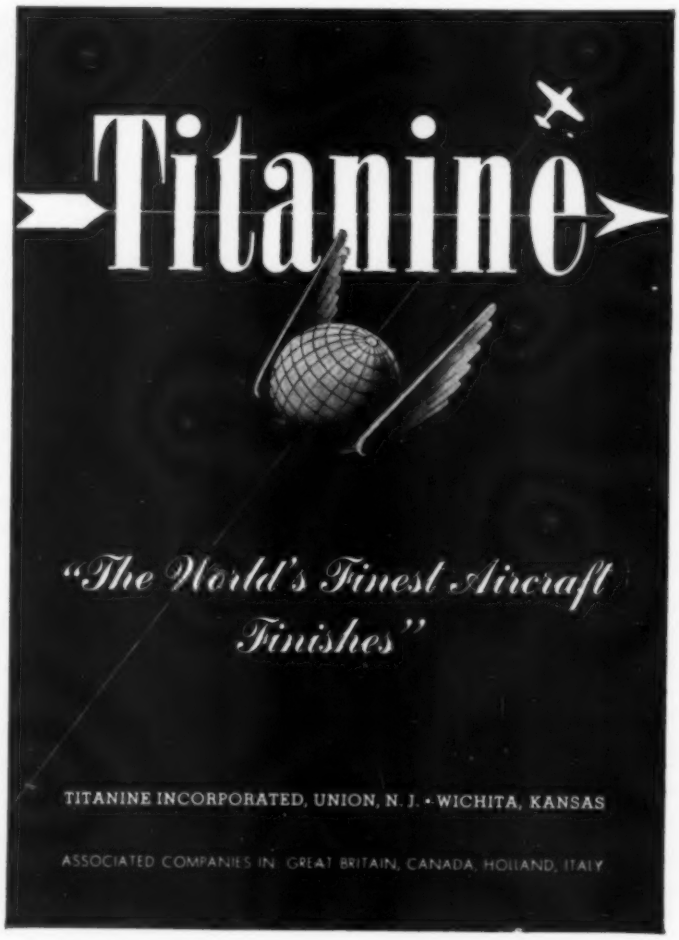
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Ryan Purchase of Navion Indicates Continued Production, Parts, Service

Ryan Aeronautical Corp., San Diego, Calif., which manufactured the popular ST and SC models before the war, has purchased Navion design, patents, manufacturing rights, jigs, tools, and inventories from North American Aviation, Inc., which announced the sale would mean continued maintenance and parts service to all Navion owners.

Ryan did not announce immediately any plans for sales and production in the future. Fifty-one Navions of nearly 300 which NAA had left in stock when production was halted were delivered during June, and NAA sold 62 Navions in a $510,962 Army contract for planes, spare parts and operational and maintenance information just before the transfer to Ryan.

The NAA announcement by President J. H. Kindelberger said the sale to Ryan assured continuity of Navion production by "a thoroughly experienced company in which I have great confidence." Consideration in the sale was not disclosed but was believed to have been approximately $750,000.

Ryan's return to lightplane production has been expected since war's end but the company has said nothing except that it was interested in such a return. T. Claude Ryan, president, was one of the industry's pioneers and his two-place ST low-wing, which became a much-used military primary trainer during the war, and three-place all-metal SC cabin low-wing were prominent before the war. Ryan is currently producing Navy Fireball jet-and-piston engine fighters, manifolds, mufflers, jet components and metal coffins. It is believed that Ryan, because of its prewar commercial aircraft experience, can produce the Navion more profitably than did North American, which lost $5,000,000 to $8,000,000 in the airplane.

Industry Declines CAA Lightplane Research

Federal law has allocated aviation research to the National Advisory Committee for Aeronautics while the Civil Aeronautics Administration has been assigned the task of regulation and this allocation should not be disturbed, the Personal Aircraft Council pointed out in a statement last month announcing the Council had voted against participation in a research program proposed by the Department of Commerce and the CAA to improve private airplane utility.

The statement, made by John Friedlander, chairman of the Council and president of Aeronca Aircraft Corp., said the industry agrees "on the need for energetic measures and sound basic principles to further develop the art of personal aviation but differs on the method that should be employed."

Waco Drops Aristocraft and Refunds Payments

Development and tooling work on the 4-place Aristocraft airplane has been discontinued by Waco Aircraft Company of Troy, Ohio, and all distributor and dealer advance payments are being refunded but their sales relationship is not being terminated, the firm announced in June.

Waco said it is building trailers and will manufacture a variety of products "until a suitable production airplane design can be afforded." The Aristocraft proved too costly in view of current conditions and was reportedly overweight, although its design was considered eligible for CAA non-spinnable approval.

Later, A. Francis Arcier, long-time chief engineer with Waco, announced his resignation and said he had no immediate plans.

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BEECHCRAFT'S NEW BONANZA

Sensation of the medium-price field, the new, all-metal, low-wing Bonanza with the characteristic Vee tail, cruises at 172 mph with a 750 mile range fully loaded! Costs only one cent per passenger mile to operate! Equipped with advanced flying instrumentation and features . . plus handsome, sound-proofed, heated and ventilated, 4-place cabin!

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- **Total time: Airframe 522:00. Engine 862:00 with 122:00 since major, and test flight since 100-hour engine check and installation of new plugs.**
- **Constant Speed Prop test flown since major overhaul by authorized Hamilton Standard Service.**
- **Disposable load 2704 lbs. Gas capacity 242 gallons.**
- **Complete instrument equipment, including engine driven vacuum pump suction system, autosyn remote indicating compass, directional gyro, gyro horizon, retractable landing lights.**
- **Exceptionally clean: All fabric surfaces completely recovered March, 1947, with best quality aircraft fabric (tested 95-100 lbs. ultimate stretch per inch). Two additional coats Lionoil on all woodwork; two coats primer on metal structure. Tubing interior in excellent condition. Plane finished in silver, using Roxalin Emycel process of heated dope, insuring penetration and long life (to U. S. Navy spec.). Interior refinished for cargo handling.**

ROBERT C. McKISSICK, AIRCRAFT SERVICES CO., MUNICIPAL AIRPORT, WACO, TEXAS . . . . *for price and other details.*

LOUISIANA AIR TOUR REVIVAL late in May attracted over 36 airplanes and 100 tourists, shown at two of 18 cities visited under leadership of Col. T. B. Herndon, state aviation director (lower right). Lower left is Currey Sanders of Shreveport, who flew a Bonanza. —(Photos by J. E. Hampson.)

All But 5 States Stage Air Tours

Off to a hurried start with insufficient time in advance for nationwide promotion, National Air Tour Week in late June was scheduled to be observed in all but five states, according to United Pilots & Mechanics Association, sponsor.

Air tours preceding the UPMA project, which should receive much more support next year, included aircades in Louisiana, Arkansas and Mississippi, the latter drawing 101 airplanes and 225 participants and visiting 16 cities. The Mississippi Aeronautics Commission reports 382,500 "seat miles," and 1,700 tour miles were flown, with 2,100 take-offs and landings but not a single mishap. Fuel was furnished by Standard Oil, 11,363 gals. being used on the tour.

Private Fliers Take Honors at Birmingham

By EDITH WIDEMAN

For the first time since war's end civilian fliers came into their own during the 13th Annual National Air Carnival in Birmingham, Ala., June 7-8, with Steadham Acker directing.

There were military events as customary but large crowds applauded many civilian performers, including Beverly Howard, national acrobatic champion; Jess Bristow, Kaddy Landry, Betty Skelton, Jack Huber, Jean Broadhead in a collapsible airplane, M. E. Dunlavy and P. C. Quigley, Bugs Thompson, John Van Hooser and Mitchell Irma Long. National Guard units from Alabama, Tennessee and Mississippi also performed.

Air safety was the theme. Announcers were Don Stremmel and Jack McClain.

Right on the nose of the New Piper Cub Special

PIPER and SENSENICH—two great names linked again in a great new personal plane—successor to the famous J3 trainer. It's again the right combination for high efficiency and smooth performance! Swing a Sensenich and be sure!

Prompt repair service on wood propellers (all makes) at a Sensenich PROP-SHOP.

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HIGHLAND PARK AIRPORT, DALLAS, TEXAS

Only 1,134 Planes Delivered As June Sales Continue Down; Beech Shows New Gain

Lightplane deliveries by nine manufacturers during June dropped to 1,134 airplanes as compared with 1,619 deliveries during May by all manufacturers and one-third the 3,380 delivered in June, 1946. Bellanca and Taylorcraft figures for June, both small, were unavailable for June.

Stinson was still leading the entire industry with 224 four-place Voyagers, 95 fewer than were shipped in May. Piper dropped to 214 from 305, Cessna to 143 from 256, Luscombe to 130 from 184, Aeronca to 101 from 144 and Erco to 45 from 112. But Beech increased 4-place Bonanza deliveries from 120 in May to 145 in June, and 51 Navions were delivered in June as against only 33 in May. Republic's Seabees numbered only 81 in June vs. 126 in May.

Shut-downs were common throughout the industry with the exception of Beech, Stinson and Aeronca, the latter having a new Army order going. One manufacturer was reported to have over 600 floor-planned airplanes in distributors' hands.

Lightplane Contest Features National Races Aug. 30-Sept. 1

With most interest centered on a new event, the $25,000 Goodyear Trophy race for new designs with 190-cu. in. (85 hp.) engines, 14 events with more than $125,000 cash prizes have been lined up for the 21st Annual National Air Races in Cleveland, Aug. 30-Sept. 1.

Benjamin T. Franklin, general manager, who urged that ticket reservations be made now and who announced seat prices have been reduced about 15 per cent, said many improvements were being made over last year's program and facilities.

New events in addition to the Goodyear contest, for which more than 20 entries have been received already, include a Sohio trophy race for P-38's and a Kendall trophy race for P-51's. Established events are the Thompson 300-mile pylon race, the Bendix transcontinental, the Weatherhead straightaway speed event for jet planes and the Halle race for women pilots, with both the Thompson and Bendix having jet divisions. Completing the program will be a large number of specialty acts including aerobatics, helicopters.

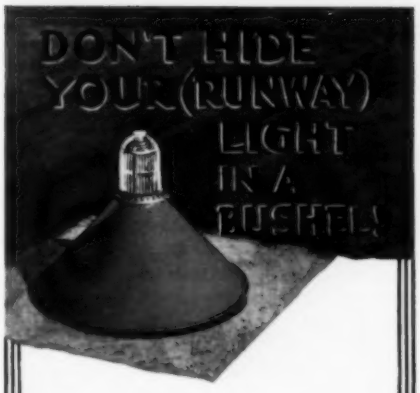
Gregg County Airport Dedication July 14-15 at Longview, Texas

The new Gregg County Airport near Longview, operated by the county court to expand flying and air service in the heart of the giant East Texas oil field, will be dedicated July 14-15 when Mid-Continent Airlines inaugurates two schedules daily to Tulsa and points north and to Houston.

Manager Dewey Dovel has invited airmen throughout the Southwest to attend the dedication for a free barbecue at noon, July 15, in Elmo Fenn's new 220 by 120-ft. hangar on the airport, which serves Longview, Gladewater and Kilgore.

Described in a recent SOUTHERN FLIGHT feature article as one of the nation's outstanding model airports, the Gregg County field is a $3,000,000 installation with one of the country's finest terminal buildings. Dobbs Enterprises is opening a new $50,000 restaurant in the building, with coffee shop and gift shop downstairs, dining room upstairs and a dance floor and soft drink bar offering the three oil cities a convenient meeting place.

Operators on the airport in addition to Penn, who is Beechcraft distributor, are East Texas Airmotive and R. G. LeTourneau, Inc. The tower is operating and the field is lighted. The Commissioner's Court is composed of Judge Earl Sharp, Fred Fliler of Longview, H. E. Bingham of Gladewater, Hugh Camp of Liberty City and Jack Bean of Kilgore.



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REVVING UP

(Continued from page 6)

climb 500 feet above the top of the clouds and slow his airplane down to normal gliding speed. The engine should be throttled to a fast idle, with just enough power to keep it warm. Flaps and wheels should be extended and the airplane trimmed by stabilizer or elevator tab to maintain the proper gliding speed with hands off the wheel or stick. During the 500-ft. descent to the clouds, the stability should be checked and attention centered on the turn indicator alone. This should be kept approximately centralized by use of the rudder only. Hands should be kept off the wheel.

During the descent through the clouds, the rudder should be used with slow movements to keep the turn indicator approximately centered. No high speed or dangerous maneuvers can develop if this system is followed. When the airplane comes out of the bottom of the clouds, it will be right side up and moving at the same gliding speed with which it started. The engine will be warm and ready for gradual throttle opening. The use of rudder is necessary, as otherwise the airplane will usually go gradually into a diving spiral to the left, on account of the torque of the fast-idling engine. Very little rudder pressure is required, and application should be slow. Even if the airplane starts to spiral, the use of rudder alone will straighten it out. By eliminating the use of the wheel or stick, it will be found that no high diving speeds or violent maneuvers will result and that the problem of uncontrolled kinetic energy will not exist. No dangerous forces can develop, and if strong gusts are encountered, the slow speed of the airplane will render them harmless.

An inexperienced pilot who finds himself flying under conditions which make him uneasy, such as heavy haze without a visible horizon, between layers of cloud, or in a broken or solid overcast, should slow down to about 100 mph. and extend the landing gear. Flight should be continued, with wheels extended, at a stabilized speed between 100 mph. and 120 mph. indicated, as long as conditions remain unchanged for the better. The wheels add drag which helps prevent wide fluctuation of speed and makes control of the airplane easier; in a very clean, highly-streamlined airplane having little drag, rapid speed fluctuations are easily attained with slight trim changes.

No passenger-carrying airplane, or any type or make, should ever be subjected to more than 3.5 g's or load factors, says Beech. At between 5.5 and 6 g's or load factors, structural failure is almost certain to occur in such airplanes.

NEWS IN BRIEF

With many American and international records expected to be broken by a field of more than 50 sailplane pilots, the Soaring Society of America's 14th Annual National Soaring Meet opened at Wichita Falls, Texas, on July 4 for a 17-day run.

A souped-up Lockheed P-80R, with Allison's new 4,600-lb.-thrust turbo-jet engine, special knife-sharp leading edge, cut-down canopy, sealed gun ports and interior radio antennae, established a new world's speed record of 623.8 mph. last month at Muroc Army Air Field, eclipsing England's 616-mph. record. Col. Albert Boyd of Wright Field was pilot and in one of his runs across a 3-kilometer course was clocked at 632.5 mph.

Names in the news: New National Aeronautic Association president is Arthur I. Boreman, Des Moines. Retiring President L. Welch Pogue is chairman. . . . Willis Lipscomb has succeeded V. E. Chenea, resigned, as Pan American Airways vice president-general traffic manager. . . . Reagan Stunkel, long with Lockheed, is new president of Aviation Maintenance Corp., Van Nuys, Calif. . . . John C. Lee has resigned as president of Menasco. . . . Peyton Magruder, until recently Glenn L. Martin's commercial sales director, has opened a consultancy at 340 W. 57th St., New York City, and 1700 Eye St., NW, Washington. . . . New officers of the Aviation Writers Association are Gene Dawson, Indianapolis News, president; Gaither Littrell, Flying, first vice president; Tom Ashley, Southern Flight, second vice president; Robert H. Wood, Aviation Week, third vice president; Gerard B. Dobben, American Aviation, executive secretary; Leslie V. Spencer, Bermingham, Castleman & Pierce, Inc., treasurer, and Robert B. Sibley, Boston Traveler, chairman. Ex-secretary Devon Francis was elected to life membership for his services.

Work is progressing on Curtiss-Wright's new CW-32 cargo plane (with the folding empennage). J. E. Winchester, former Slick Airways chief engineer, has been named to CW's engineering sales staff. . . . Airlines in U. S. may soon consolidate pilot training operations, American Airlines' DC-6 school at Ardmore, Okla., being viewed as a possible choice. Britain's BOAC and BEAC have formed such a school for pilots, navigators, radio officers, flight engineers, ground engineers, radio mechanics and flight controllers. It is open to all civil air transport operators.

World's fastest propeller-driven airplane today, according to Chance Vought Aircraft Division of UAC, is a new Corsair with a new and more powerful Pratt & Whitney engine. No details . . . Ten B-17 Flying Fortresses are being equipped with radio-controlled devices and other gadgets for a series of water landing experiments at Eglin Field, Fla., to gain knowledge to improve safety in future aircraft. Curtiss is doing the modifications at Columbus, Ohio. Damage-proof cameras will record the effects of water landings, to be studied via television.

Pan American World Airways in June inaugurated weekly round-the-world schedules from Los Angeles and San Francisco. Round-the-world flying approximates 120 hrs. and costs $1,700.

Pioneer Air Lines, the nation's first to be certificated as a "feeder", flew a total of 170,371 revenue plane miles in May compared to 150,750 in

April and 79,604 in May, 1946. Robert L. Smith, president of the Texas carrier, said 5,468 passengers were carried as against 4,812 in April. Only 1,506 were flown in May, 1946. Southwest Airways, six months old as a feeder, flew 8,283 passengers in May.

CAA Administrator T. P. Wright has established technical development activities as an independent service, with Deputy Administrator Charles I. Stanton as chairman of the new Technical Development Committee. Two additional deputy administrators are Fred B. Lee, formerly executive assistant, who will handle Federal airways, safety regulation, aviation training, research and meteorological coordination, and George Burgess, formerly assistant to W. A. M. Burden, who is resigning as assistant secretary of commerce. Burgess will handle the office of airports, Washington National Airport, non-scheduled flying advisory committee, state relations and economics. As a result Wright expects to spend more time with NACA, of which he is vice chairman. ★ ★ ★

AIR REPORT

(Continued from page 8)

when some of the newer dusts and sprays, including the weed killer 2, 4-D, drift into neighboring farms, killing crops. One farmer said he tried applying the stuff from the ground but even then the wind carried enough into a neighboring patch to kill cotton plants 400 yards away. DDT has now been studied so exhaustively that it is possible to control its strength so precisely as to kill mosquitoes without harming plant and marine life.

★ ★ ★

Combination Flap-Aileron for Lightplanes

Boeing engineers have completed exhaustive test-flying of a full-span trailing flap, installed on an Interstate L-6, which serves also, in all attitudes, as an aileron in conjunction with spoilers atop the wing. Its testing preceded installation on the new Boeing XL-15, radically-designed liaison airplane for the Army. The huge flap, an auxiliary airfoil, has an area nearly 30 per cent that of the wing. It provides very steep climb and descent and slow flight. The XL-15 probably will fly before the middle of July.

★ ★ ★

New Lockheed Saturn

While looking around the Lockheed lot at Burbank last month, SF editors ran into Saturn No. 2, being readied for flight tests with larger engines than No. 1, now sitting in a corner gathering dust and corrosion. Lockheed has said the original Saturn, with two 525-hp. Continentals, had been abandoned. The new one we saw being readied (it has probably flown by now) has two Wright engines of 800-hp. each, together with other changes. The high-wing Saturn is a 15-place feeder design, with crew of two.

★ ★ ★

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STALLS AND SPINS

(Continued from page 22)

If you steepen the bank only 10 degrees more, these increases in load and stalling speed are more than doubled.

Bank Effects on Stall Speeds

If an airplane weighs 1,000 pounds, and normally stalls at 40 miles an hour, here are the loads and stalling speeds imposed on it at different banks:

Degree of Bank	Load	Stalling Speed
0	1,000	40
10	1,010	40.25
20	1,060	41.2
30	1,150	42.7
40	1,310	45.7
50	1,560	50
60	2,000	56.4
70	2,920	68.4
80	5,750	136
90	Bail out	

If these figures are not enough to make you avoid steep turns, and be ready to recover from a spin without warning in any turn, remember that they apply only to perfectly co-ordinated turns. If you always make perfect turns, you ought to be on exhibit in some museum. The most dangerous error in a turn is skidding. The inside wing in a turn has less air speed than the outside wing. Using aileron to hold this wing up—or to raise it when it has been temporarily stalled by a gust—increases the angle of attack, reduces the speed still more and may stall it completely. The safest way to pick this wing up is to increase its air speed by using opposite rudder. We do not mean that you should not use any aileron in recovering from a turn. Just be sure that you don't use too much aileron.

The closer you are to the ground, the more likely you are to stall and spin. This is not theory. It is cold fact. The reasons are numerous but simple. In the first place, your attention is divided between flying the airplane and watching something on the ground. In fact, your purpose in flying low is usually concerned with something on the earth's surface. It may be a legitimate matter like landing on the airport, or it may be frivolous like seeing the expression on your girl friend's face while you fly low enough to prove that you are really flying an airplane.

It is hard, even for an experienced pilot, to keep this division of attention from becoming lopsided. Dual instruction in Figure 8's accounts for most of the fatalities in flight training because both the instructor and the student allow themselves to be hypnotized by the pylon even if it is nothing more glamorous than a telephone pole. Since the division of your attention is sure to be unequal, play safe and devote most of it to flying the airplane.

Another cause of stalls near the ground is rather ironical. It is the fear of flying near the ground. In attempting to fly as perfectly as possible, you become tense. You remember the dangers of steep turn; so you keep your banks as shallow as possible, even when poor planning makes it necessary for you to turn sharply. You push the rudder mechanically to point the nose where you want to go, forgetting that it is the degree of bank that determines your path over the ground in a turn. I catch myself doing the same thing when I am carrying a "first rider" in rough air. I watch for the symptoms and take my feet completely off the rudder pedals for a moment at the first sign of tenseness.

On the first turn after take-off, the danger of a spin is aggravated by the optical illusion caused by the wind pushing you toward the center of the turn. Your eyes tell you that you are slipping—which shows that seeing should not always be believing. If you follow your first impulse, you will shallow your bank with aileron and push inside rudder to keep the airplane turning—preparing a perfect set up for a cross-control spin. If it is a climbing turn to the left, of course, torque effect will make your error worse. In such a turn you nearly always have to hold a little top rudder.

Pull-ups involve forces similar to turns. The lift for the pull-up is obtained from excess speed and higher angle of attack. This raises the load and stalling speed of the airplane just as in turns. The stall usually does not occur at the top of the climb, but at the start of the pull-up where the air speed is greatest. This is where the pilot least expects it and he has the least time to recover.

We have not said anything about acrobatics. Most pilots who fly acrobatically close to the ground probably know that it is dangerous but do not know how dangerous. They think they are good enough to get away with it. They do not know their own limitations and do not allow any margin of safety to protect them from their ignorance. You probably agree with this. But do you realize that you may be showing the same ignorance when you take a sightseeing trip over town?

At low altitudes over large cities or industrial areas you may find air turbulent enough to stall your plane in level flight as well as turns. If you have plenty of altitude you may come out of it without even realizing that you have been in an incipient spin. But if you are low enough to get a good look at your friend's house, you

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nay be dismayed by the sudden loss of altitude and pull back on the elevator control. You will then have a full spin on your hands—not enough altitude in which to recover.

A pilot who was used to flying in flat country was once flying toward a range of mountains when he noticed his rpm. falling off and his air speed decreasing. He kept pushing on more throttle. Suddenly the nose dropped with a whoosh. Luckily, he had plenty of altitude to recover. So he awoke to the fact that he had been keeping his nose on the "horizon"—the top of the mountains.

Another was flying smoothly down the Hudson River when she found herself in a spin. She managed to recover. It occurred at a point where the valley was narrow and with high mountains on either side. Rough terrain induces some very strong and erratic air currents which may stall an airplane.

We once lost control of a Cub Cruiser coming out of San Gorgonio Pass into California's Imperial Valley. The jolt was so violent we were nearly knocked out. On another occasion, while searching for a party of lost hunters near the base of a mountain range, we were tossed around like a feather. We feel lucky to have gotten out of it—by the simple procedure of letting the controls alone.

But we have been flying for 15 years with no accident of any kind. Flying is safe, but sometimes pilots are not. We recommend the following rules:

1. Be ready to recover from a spin any time.
2. Avoid cities, rough terrain, and bad weather.
3. Never fly lower than you have to.
4. Plan your flight path so that steep banks are not necessary.
5. It can't happen to you — more than once. ★ ★ ★

Tomorrow's Pilots

In all fairness to youngsters who show ambitious inclinations toward aviation, or who have hidden talents and natural aptitude in that direction, parents should overcome their fear and help their youngsters to pursue their interest to the limit.

If a youngster makes up his mind to fly in his youth, nothing will stop that desire, not even parental objections. If he is not cut out to be a pilot, he will find it out in his own mind long before others suspect it. If it is his lot to be a designer, engineer or member of a ground crew, he will automatically put flying secondary in his thoughts.—Roger Q. Williams in "Up Currents."

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VALUES IN RESOURCES

(Continued from page 32)

sole purpose of attending these aviation affairs (in 1946 there were 4,357 registered visitors at the Miami All American Air Maneuvers and it is reasonable to double this for the state total during the winter season).

These aerial tourists flying their own planes spend an average of $25 per day in non-aviation channels for at least seven days in the state. Florida's tourist business was thus enhanced by at least $1,400,000 because of these flying tourists who came here solely to enjoy and participate in aviation events. Although relatively small in comparison to the other indirect revenues reported here, this is the greatest potential source of all. When personal flying increases (as it is doing), this can be as large, if not larger, than any other item.

Throughout 1946, veterans' flight training has been conducted at 124 aviation schools in the state having an average enrollment of 31 veterans each. These veterans, many attracted here from other states where climatic conditions are not as favorable, are paid subsistence by the Veterans Administration ranging from $60 per month, if single, to $90 per month if married. Approximately half the veterans in the flight training program draw monthly subsistence averaging $75 per month. This is in addition to the flight training costs and is spent in non-aeronautical channels. It annually amounts to $1,441,500 spent in Florida because of Florida's aviation schools.

The aerial dusting and spraying of Florida groves and farms results annually in the saving of at least $1,000,000 in the cost of producing food. Many concerns are engaged solely in the aerial dusting and spraying business and annually dust or spray thousands of acres of groves, bean fields and other crops. Farmers and growers use this service because it is highly effective, lower in cost than ground spraying methods and much faster. The savings which the farmers and growers enjoy is passed on to the consumer of these foods in lower costs. It is estimated that the use of the airplane in agriculture results annually in the saving of at least $1,000,000 to our agricultural industry. ★ ★ ★

MARKETING FUEL

(Continued from page 27)

institution, brand has come to stand for more than the physical, chemical, or performance characteristics of the product.

Any discussion of the marketing of gasoline through airports should involve consideration of storage capacities. Table III shows the number of United States airports with varying storage capacities. It will be noted that capacities of from 1,000 to 3,000 gallons are most prevalent and that airports with capacities of from 500 to 1,000 gallons are next in importance. The table also reveals that airports with storage capacities of from 2,000 to 3,000 gallons have increased in number almost 250 per cent over the four-year period, those with capacities of from 1,000 to 2,000 gallons have increased almost 175 per cent, and those with capacities of from 5,000 to 10,000 gallons have increased almost 125 per cent. Those airports with the largest storage capacities have either increased in number very slightly or have decreased, reflecting the curtailment of military flying.

Today, storage and fueling facilities are an important part of airport planning with due regard being given to the various types of fuel (by octane rating) to be sold. All in all it appears that airport managers and planners are ready to develop their sales of aviation gasoline and that their outlets will not become bottlenecks in expanding distribution.

★ ★ ★

New Airport Fire Equipment Designed

New crash-fire equipment and techniques developed by the AAF and employing water spray and carbon dioxide foam are termed well-fitted to civilian airport use, according to the U. S. Department of Commerce. Orders for the report, PB-47866, "Fog Nozzle Installations Class 155 Crash Fire Truck," photostat $4, microfilm $1; 48 pages; should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C.

TABLE III

Number of United States Airports with Varying Aviation Gasoline Storage Capacities*

(As of Janury 1, of Year Indicated)

Capacity (Gals.)	1944	1945	1946	1947
Under 500	147	158	222	282
500 - 1,000	324	434	535	625
1,000 - 2,000	340	417	685	889
2,000 - 3,000	128	219	310	438
3,000 - 5,000	117	136	174	222
5,000 - 10,000	65	97	114	145
10,000 - 50,000	157	157	148	170
50,000 - 100,000	115	118	97	91
Over 100,000	277	321	340	332

*Source: CAA from Forms—ACA-29A.

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